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7. Author(s): Stephen T. Mennemeyer, Ph.D.; Leo B. Reardon, CPA and Douglas J McGregor, C P A.

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55 Wheeler Street
Cambridge, Massachusetts 02138

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Abt Associates Inc.
55 Wheeler Street, Cambridge, Massachusetts 02138
Telephone • Area 617-492-7100
TWX: 710-3201382

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FINAL REPORT:

A Study of the Quality and Effectiveness of Experimental Fixed Price Medicare Part A Intermediary Contracting

April 23, 1985

Contract No. HCFA-500-83-0030

Submitted to:

William Sobaski
DHHS/HCFA
2B14 Oak Meadows Building
6325 Security Boulevard
Baltimore, Maryland 21207

Authors:

Abt Associates Inc.
Stephen T. Mennemeyer, Ph.D.,
Project Director
Leo B. Reardon

Troiano, Connolly and Company:
Joseph F. Connolly, C.P.A.
Douglas J. McGregor, C.P.A.

Contract Manager	Quality Control Reviewer	Management Reviewer

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EXECUTIVE SUMMARY

This report evaluates the performance of Medicare Part A fiscal intermediaries which are currently operating under fixed price contracts in New York and Missouri. Their fixed price contracts are a radical departure from the customary procedures of the Medicare program which normally contracts with its intermediaries on a cost reimbursed basis. Of particular interest is the fact that the contract in Missouri was awarded competitively and contained fewer financial incentives than the contract in New York which was negotiated. The two sites thus offer not only a test of the merits of fixed price contracting but also a test of competitive vs. negotiated procurement.

Under the fixed price contract, offerors agree to perform all stipulated administrative work for a fixed payment. Any difference between actual cost and the fixed price is a profit or loss to the contractor. (Medicare benefit payments continue to be paid by the government in a manner unaffected by this arrangement). The fixed price experiments in question offer the promise of reducing the administrative costs of the Medicare program via the incentives of profit, loss and competition. Whether this promise has been realized, and what it would mean to the program are the subject of this report.

Abt Associates Inc. has conducted an evaluation of these experiments under contract to the Health Care Financing Administration (HCFA). The evaluation examined the performance of the contractors and the economic impacts of the experiments on the Medicare program.

In regard to the economic effects of the experiments, we find that the competed Missouri experiment reduced administrative costs to the Medicare program. Statistical estimates of these savings range from $3.8 to $5.1 million dollars. These savings range from 26 to 35 percent of the value of the

contract. The New York experiment, while continuing the state's history of achieving costs below the national average, has not achieved significant savings beyond what would have been expected if the experiment had not occurred. Neither experiment had any adverse effect on the amount of benefits paid by the Medicare program.

In regard to contractor performance, both contractors generally performed well. There were no disruptions in service in New York even though the experiment involved the consolidation of seven previously separate contractors. In fact, the New York contractor's performance has been sufficiently good to have won $663,246 in incentive payments (1.4% of the value of the fixed price contract) through 1983. In Missouri, performance has met contract requirements but there were delays in bill processing during the start of the contract at a time when two incumbent contractors were being consolidated. There is no evidence that beneficiaries were inconvenienced by these difficulties in Missouri; hospitals experienced some initial cash flow problems but these were corrected by HCFA on a temporary basis.

The remainder of this executive summary is organized as follows. We first review the background of the experiments and our methods of evaluation. We then report in more detail our findings concerning the impact of the experiments on the Medicare program and on the the contractors themselves. We conclude with recommendations for the use and design of fixed price contracts.

Background

Medicare is a federal insurance program which pays for the health care costs of elderly and disabled persons in the United States. The program consists of two parts. Part A ("Hospital Benefits for the Aged and Disabled")

provides coverage for inpatient hospital and nursing home services. Part B ("Supplemental Medical Insurance Benefits for the Aged and Disabled") covers charges for physicians, outpatient hospitals, home health visits, and medical appliances. Approximately 27 million persons are enrolled in each part of Medicare. In 1982, benefit payments under Parts A and B were, respectively, about $33 billion and $11 billion. The Medicare program is administered by the Health Care Financing Administration of the U.S. Department of Health and Human Services. HCFA, in turn, contracts with private health insurance companies to process Medicare claims in various geographic territories. In 1982, there were 68 Part A contractors (intermediaries) and 42 Part B contractors (carriers). Their direct administrative costs were, respectively, about $232 million and $459 million.

Title XVIII of the Social Security Act directed the Department of Health and Human Services (DHHS) to enter into contracts with organizations to administer the Medicare program which would result in neither profit nor loss to the contractor.[1] These cost reimbursement contracts were considered necessary in the beginning of Medicare to provide for efficient program implementation and to encourage contractor participation. At the present time, DHHS has over 100 cost reimbursement contracts with organizations to administer portions of the Medicare program in specified geographical areas.

As the Medicare program matured, the government's focus began to shift from its original concentration on operational necessity to administrative costs and quality of contractor performance.

In October 1972, Public Law 92-603 was enacted. It authorized DHHS to perform experiments in Medicare contracting via fixed price or incentive arrangements with contractors.

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[1]In this proposal all remarks properly applying to entities which preceded DHHS or HCFA are attributed to the current organizations.

In the spring of 1977, HCFA began experiments which involved: (1) a fixed payment for all contract administration with few opportunities for adjustments; (2) outright competition to be the carrier for a particular territory; (3) monitoring plans to measure contractor performance; (4) liquidated damage assessments for inadequate performance; and (5) enhanced requirements for beneficiary services in the form of toll-free telephone service. Incentive payments for superior performance have been added to some of the more recent fixed price contracts.

In exercising its legislative authority to undertake fixed price contracting experiments, HCFA has attempted to test the viability of fixed price contracts in varied settings. HCFA's first wave of fixed price contracts were in the Part B program in Maine, upstate New York and Illinois. The Maine experiment was recompeted in 1981. The Illinois experiment was recompeted in 1982 and a new contractor began operations in early 1984. The upstate New York experiment has now ended and the contract has reverted to a traditional cost-reimbursed contract. Evaluation of the first wave of experiments (Abt Associates, 1983) found that they achieved significant savings. There were some disruptions in service, however, due to the consolidation of territories and the switching of contractors.

HCFA's second wave of fixed price contracting experiments were directed at the Part A program. There are currently two Part A experiments, one in New York and the other in Missouri and the area of metropolitan Kansas City. The experiments in New York and Missouri are subjects of this report.

Finally, the Deficit Reduction Act of 1984 gives HCFA further authority to competitively award up to eight contracts (two per year in 1984 and 1985 in both Part A and Part B) to replace any current contractor whose performance "over a period of time has been in the lowest 20th percentile ... as measured

by the Secretary's cost and performance criteria." HCFA still retains its authority to engage in fixed price experiments under the 1972 law. Consequently, findings of this evaluation are relevant to these anticipated future contracts which will involve further competition in the Medicare program.

Under the HCFA Fixed Price experiments, intermediaries and carriers enter into a multi-year fixed price contract for administering the program. It should be emphasized that the fixed price agreement covers only the firm's administrative costs; benefit payments to beneficiaries and providers are paid from an entirely separate set of funds not subject to a fixed price limitation.

Firms in the fixed price experiments agree to conduct all claims processing activities for three to five years for a fixed price. The main incentive offered by these contracts is the right to retain as profit any residual contract payments which exceed the actual cost of claims processing. In addition, some of the experiments allow the contractor to earn incentive payments for exceptionally accurate and speedy claims processing. The experimental contracts are written and executed in a manner such that the contractor assumes various risks; for instance, the contractors are "at risk" for variations in claims volume over the period of the contract, input price inflation, costs of supplies and equipment, utilities, and taxes, and general variation in productivity. However, such government-initiated cost increases as postage costs and social security taxes were included as provisions for adjustment in some of the fixed price contracts. The most important risk arises from unanticipated variation in claim volume or workload. By agreeing to administer the program for a total fixed price, the contractors stand to lose if claim volume rises beyond the budget level.

To ensure that the fixed price contractors would not decrease their levels of service to maximize residual profits, the fixed price contracts specify a variety of performance standards. The contractor is assessed liquidated damages for each standard failed.

In undertaking the current Medicare fixed price experiments, HCFA sought to obtain claims processing services at a cost that was lower than traditional cost reimbursed contracts. HCFA anticipated that competitive fixed price contracts would create profit and loss incentives that would encourage contractors to find ways to save money. HCFA did not believe that traditional cost reimbursed contracts encouraged the type of careful operational scrutiny that a serious cost reduction program requires. In particular, HCFA expected that competitive fixed price contracts would promote greater efficiency in operations, and reductions in overhead. HCFA also expected that it could successfully negotiate fixed price contracts with incumbent contractors as an alternative to conducting formal competitions. The New York Part A experiment is one example of such negotiations. In both the Missouri and New York Part A experiments, improvements were expected to occur at least in part because existing territories were being consolidated.

Evaluation Protocol

In the process of evaluating the fixed price experiments in Missouri and New York, Abt Associates Inc. and its subcontractor, Troiano, Connolly and Company, engaged in the following types of research activities:

- Site Visits - Operations. Operations of the two fixed price contractors were examined by visits to their main claims processing sites. In addition, four comparable cost-reimbursed intermediaries were selected as comparison sites. These four contractors' operations were also examined with the same site visit methods.

- Site Visits - Audits. A series of fact-finding visits to the audit sites of the fixed price contractors was conducted by teams of Certified Public Accountants with extensive auditing experience in Medicare and Blue Cross rate setting. These visits were designed to examine whether the audit processes of the contractors had changed in response to the financial incentives of fixed price contracting. Particular attention was given to discovering any changes in the audit program procedures; qualifications and staffing of the audit areas; and the timeliness of cost report settlement activities.

- Analysis of Cost and Performance Data. Program data on the cost and performance of all Medicare intermediaries were examined for the period 1976-1983. The costs of fixed price contractors were compared to other contractors using various statistical methods. In addition, levels of benefit payments were examined in relation to the contractor's level of administrative cost.

- Review of HCFA's Methods of Awarding Contracts. All phases of HCFA's award processes for the fixed price contracts were reviewed. We examined the negotiation process in New York and the proposals submitted by the bidders in Missouri as well as HCFA's methodology for scoring these proposals. Extensive discussions were held with HCFA staff to learn about the rationale of the current award process, its history of development, and alternative approaches that were or are being considered.

- Review of HCFA's Methods of Monitoring Intermediary Performance. HCFA's current system of monitoring intermediary performance was reviewed along with its history of development.

- Informal Survey of Provider Groups. An informal telephone survey of selected provider professional associations in the experimental areas was conducted. These groups were asked to assess the current level of service they received from the fixed price contractors. Other questions were specifically tailored to specific programs and/or conditions applicable to each area.

Findings

Impact of the Experiments on Administrative Costs

Our examination of the two fixed price contractors necessarily involved an extensive analysis of the costs and performance of all Medicare Part A intermediaries. Our analysis finds that administrative costs in Medicare have

been steadily declining since the initiation of the program in 1965 in spite of serious inflation in the economy. Administrative costs today are about $240 million or 0.6 percent of Medicare benefit payments. The average worker at a Medicare intermediary processed only 3,799 bills per year in 1976 compared to 9,911 bills per year in 1983. Total administrative costs per bill were $9.26 in 1976 (in 1983 equivalent dollars) and $5.58 per bill in 1983. This dramatic improvement in productivity has occurred due in part to the introduction of computers and declines in their costs.

In spite of these reductions in cost, there has been concern that the rate of administrative cost reduction in Medicare might not be as fast as trends in productivity would optimally permit. Our evaluation of the fixed price experiments in New York and Missouri has consequently had to consider how much costs in these areas may reasonably have been expected to decline in the absence of the fixed price experiments.

Analysis of Cost Reductions

To address this issue we conducted a statistical analysis of intermediary administrative costs for the period 1976 to 1983. Our analysis considered how intermediary costs are affected by variations in the speed, accuracy, and thoroughness of a contractor's work as well as by differences in the volume of bills which the contractor must process. We also controlled for regional variations in input prices facing the contractors.

In regard to Missouri, our analysis finds that that the experiment reduced administrative costs paid by the government by $1.36 to $1.80 per bill processed or $3.8 to $5.1 million. Prior to the fixed price experiment, the two incumbent contractors in Missouri had begun to achieve average costs below the national average of all intermediaries. The fixed price competition led

to a bid by St. Louis Blue Cross that was significantly lower than what would have been predicted by previous performance. This savings is 26 to 35 percent of the value of the contract.

Our analysis also shows that savings by the government were not necessarily matched by internal savings on the part of the Missouri contractor: Using standard Medicare accounting practices, the Missouri contractor reports levels of cost which were not appreciably different from what would have been expected in the absence of the fixed price experiment.

It should be noted that the contractor in Missouri reports a loss equal to about 25 percent of the contract's value. The contractor's apparent loss may be due to excessively optimistic and aggressive bidding. It is also arguable if the loss is as large as reported depending on how overhead expenses of the contractor are apportioned among various lines of business.

The New York experiment, in contrast, has not achieved significant savings for the government relative to what the government would have been expected to spend for intermediary services in the absence of the experiment. The consolidated average costs of New York contractors prior to the fixed price experiment were below the national average for all intermediaries. Under the fixed price experiment, New York's price per claim remained below the national average and within the range that would have been predicted by previous performance. The New York experiment essentially provided a useful vehicle for consolidating seven contractors so that the state's aggregate cost performance would continue to be better than the national average. New York's performance under its contract has been very good. Through 1983, the contractor has merited incentive payments of $663,246 (1.4% of the value of its fixed price contract) for performance beyond minimum contract requirements.

Effects on Benefit Payments

Neither fixed price experiment had any adverse effect on benefits paid by the Medicare program. Our statistical analysis examined variations in benefit payments per bill among Medicare intermediaries for the period 1976-1983. The analysis controlled for time trends and general inflation in the economy as well as various measures of intermediary speed and accuracy. We found that benefit payments in the two fixed price areas remained within levels normal to other Medicare intermediaries. Consequently, there is no evidence to suggest that care in paying Medicare benefits is harmed by the financial pressures of fixed price contracts.

Our findings about the costs incurred by the government under the two experiments suggests that a competitive procurement has the potential to achieve greater cost reductions for the government than does the process of negotiating with incumbent contractors.

Procurement and Contracting Issues

The fixed price contract in New York was awarded to a consortium of Blue Cross plans incumbent as contractors in that state in response to a proposal which they initiated jointly with the Blue Cross Association. The proposal was initiated partly to forestall the possibility that HCFA might seek to consolidate the state under one contractor on a competitive basis. The initial Blue Cross proposal called for a consolidation of incumbent contractors (all were Blue Cross member plans) under a traditional cost reimbursed contract. Subsequent negotiation with HCFA lead to a fixed price contract with provisions for liquidated damages and incentive payments. HCFA insisted on a fixed price contract with liquidated damages to assure that costs in New York would not rise relative to previous levels under cost reimbursed

contracts; Blue Cross insisted that the risks of fixed price with liquidated damages should be offset by the opportunity to win higher compensation in the event of superior performance.

In Missouri, the contract was awarded after an open competition wherein only two of four incumbent contractors submitted bids. The competed contract required fixed price compensation (with some provisions for inflation) with liquidated damages in the event that the contractor did not meet performance standards. Only two bids were submitted, one by Blue Cross of Kansas City, the other by St. Louis Blue Cross. Since bidders were closely matched in terms of their experience and the technical competence of their proposals, price was the factor determining the winner. The winning contractor, Blue Cross of St. Louis, bid a fixed price that was about $2 million below that of Blue Cross of Kansas City.

Our comparison of the negotiated New York contract vs. the competed Missouri contract finds that terms to the government were more favorable in the competitive situation. The principal factor which differentiates the two contracts is the presence of incentive payments in the New York contract and their absence in Missouri. The New York contract also was more generous in allowing certain expenses associated with the consolidation of contractors to occur on a cost reimbursed basis under their terminating contracts.

Government-initiated changes in the scope of work required several modifications to the fixed price contracts in order to accommodate legislated changes in the Medicare program. In New York, the net effect of modifications (both increases and decreases in price) was an increase in price amounting to 4 percent of the contract's initial value. In Missouri the net effect of modifications was an increase of 5 percent in the contract's initial value. While all of these modifications appear to be necessary and reasonable, HCFA

does not maintain systematic data which would permit a comparison of these modifications with those of other intermediaries.

Our examination of the process of contract award and modification reveals three areas that need improvement. One area is the process by which a fixed price is determined for subsequent contract years when the government exercises its option to extend a contract (typically in one year increments) beyond its minimum period. At present, the price for an option year is open to negotiation between the intermediary and the government. We believe that this open ended negotiation should be replaced by a formula which ties the option year price to an index of input prices applied to the original fixed price. That is, the original fixed price should remain in effect in the option years with adjustments for inflation, productivity increases, and any modifications to the scope of work that may be required.

The current method of open negotiation has several shortcomings. It subjects the intermediary to the risk that the government may be excessively zealous in seeking price reductions during the option year; it subjects the government to the risk that a contractor may try to exact the maximum possible price in a situation where it would be expensive and inconvenient to the government to recompete the contract at an early date; it encourages irresponsible bidding and/or irresponsible awards by leaving open the possibility that an excessively low or high bid can be corrected by negotiation in the option year.

A second area for improvement concerns the format in which HCFA routinely reports and monitors the expenses of its Medicare contractors. The present accounting format (HCFA Form 1616 and its detail) does not make a clear distinction as to what portions of a contractor's costs are allocations of general corporate overhead expense and which are direct costs due to the

claims processing project. HCFA could better monitor its Medicare contractor's costs it if followed the practice of calculating and reporting overhead rates similar in format to the rates that it computes using Standard Form 1411 for other competed contracts. Explicit calculation of overhead rates would make it easier for HCFA to compare competitive Medicare bids to determine the level and composition of resources that the bidder offers.

A third area for improvement in the contract award and negotiation process is in the documentation of costs associated with changes in a contractor's scope of work. Scope of work changes are inevitable in the Medicare program because legislation frequently changes the program's benefits and administrative procedures. HCFA currently negotiates changes on an ad hoc basis in contractor reimbursement due to changes in the scope of work. We have not been able to obtain from HCFA any data which compare the cost of scope of work changes at one contractor with those at another. HCFA officials have also expressed their need for the development of comparable data. It seems reasonable that changes in work should be comparable among contractors at least in situations where national program changes (e.g., the introduction of a new billing form or new procedure codes) cause the change in scope. Lack of comparable data among contractors invites a potential problem, namely that the financial discipline of a fixed price contract may be gradually undermined by a series of ad hoc contract modifications. We do not mean to assert here that either of these problems were necessarily present in the New York or Missouri experiments. However, a more widespread use of fixed price contracts would increase the chances that these potential problems will become real.

Finally, we should note that fixed price contracts are necessarily different from cost reimbursed contracts in terms of the methods of contract monitoring which are appropriate to them. Cost reimbursed contracts contain

no inherent financial incentive for the contractor to reduce cost. This absence of incentives implies that the government must monitor both the quality of the contractor's output and its methods of production in considerable detail. Since government contracting officials are never as active in day-to-day operations as is the contractor, it also seems likely that the government will make some errors (either positive or negative) in estimating the contractor's potential for cost reductions.

Fixed price contracts, however, contain financial incentives that encourage cost reduction. It is necessary in this case for the government to closely monitor the quality of the contractor's final output to be sure that it meets contract requirements. However, it is essentially a waste of money for the government to try to monitor the details of how a fixed price contractor does its job because a fixed price contract contains inherent incentives to operate efficiently. Detailed monitoring of the production process ends up duplicating the management tasks for which the government hired the contractor in the first place.

Transition and Consolidation

The New York and Missouri experiments each involved the consolidation of incumbent contractors. These consolidations were effected more smoothly than have consolidations in previous fixed price experiments involving Part B carriers. There were no service disruptions in the New York Part A consolidation. In Missouri, there was a period of several months where bill processing seriously fell behind schedule. Medicare beneficiaries in Missouri were not inconvenienced by this delay but hospitals and other Part A providers experienced some cash flow difficulties which were corrected by HCFA on a temporary basis.

The generally smooth transitions are due partly to the fact that Medicare Part A administration largely occurs between the intermediary and providers. Beneficiaries have few direct contacts with the intermediary. As a consequence, bill processing difficulties can be resolved between a comparatively small number of parties.

A second factor, which accounted for the smooth transition in New York, was the voluntary nature of the New York consolidation by the affected Blue Cross plans.

Our examination of the Missouri experiment did reveal one difficulty in the transition process resulting from a dispute between Blue Cross of Kansas City and St. Louis Blue Cross regarding the format in which computerized data were to be exchanged as part of the consolidation. Ambiguity in the terms of the cost reimbursed contracts under which they were operating prior to the transition accounts for the dispute. We consequently recommend that HCFA specify in more detail the obligations of its contractors to provide data to their successors in the event of contract terminations.

Performance of Audit Duties

Audit operations of the fixed price contractors were examined as part of the evaluation. Medicare intermediaries have an obligation to audit hospitals and other providers to arrive at a final settlement of cost attributable to the Medicare program. While this function is likely to diminish in importance as HCFA moves away from a system of cost based reimbursement to one of prospective payment by diagnostic group, the audit function was an important activity during the period that we studied.

Our evaluation focused mainly on the level of effort which fixed price contractors devoted to this activity. Under a fixed price contract there is

always the potential that contractors may diminish their work in order to enhance potential profits. The fixed price contracts which we examined contained specific audit requirements and provisions for liquidated damages for inadequate work which appeared to be sufficient to guard against this temptation.

In this activity, Abt Associates was assisted by the audit firm of Troiano, Connolly and Company. Teams of senior certified public accountants from our subcontractor visited the principle audit office and several field offices of the contractors. Records of the HCFA regional office were also examined and their staffs were interviewed. Particular attention was given to discovering changes which the contractor may have undertaken in procedures of the audit program; staffing and their professional qualifications; and the timeliness of final cost report settlements.

We found no evidence that the level of effort or quality of audit work declined under the fixed price contracts. Changes in audit practice at various sites reflected normal professional practice and improvement.

Comparisons with Previous Fixed Price Experiments

This evaluation of the Part A fixed price experiments parallels an earlier evaluation by Abt Associates of competitive fixed price experiments for Medicare Part B carriers in Maine, Upstate New York, and Illinois. We found in the Part B evaluation that there were significant savings to the government and no adverse effects on Medicare benefit payments. Savings in the Part B experiments were consistent with the savings that we observe in the Missouri Part A experiment. Formal competition appears to be a key factor to obtaining significant program savings on administrative costs.

The Part B experiments did experience disruptions in service which ranged from very mild in New York and Maine to severe in Illinois. These problems were the result of consolidating territories and changing contractors rather than any incentive inherent to competitive procurements or fixed price contracts. The mild service disruptions which we observed in the Part A experiment in Missouri are consistent with this pattern. The very smooth service transition in the New York Part A experiment is largely due to the voluntary negotiated nature of the contract.

Contractor consolidations in Part A are inherently less likely to inconvenience Medicare beneficiaries because most administrative transactions occur directly between providers and the intermediary.

Other Findings

We have examined in this study how intermediary administrative cost is affected by computers and by the size of bill processing operations. We have found that intermediary costs fall significantly when bills are received in machine readable form from hospitals and other providers. Encouraging the submission of machine readable bills is clearly to the benefit of the Medicare program in terms of reducing bill processing cost.

The importance of machine readable bills suggests that there may also be significant economies of scale in intermediary bill processing. Our statistical analysis of the relation of costs to the volume of bills processed, however, did not clearly reveal this relationship. The inconsistent evidence on the extent of economies of scale may be explained in either of two ways. First, the majority of intermediaries are still fairly small; only a few intermediaries have volumes exceeding two million bills per year. This fact may mask the extent of scale economies because there are too few examples of

their presence to show as yet a statistically significant relationship. It is notable that two recent large consolidations in California and in the New York experiment have in fact achieved relatively low administrative costs. An alternative explanation, however, may be that it is now possible to achieve economies with the use of small computer systems at relatively low bill volumes. Further experimentation with intermediary consolidation will be needed to clarify the relative importance of scale and computerization.

We have also found that the mix of bills processed by an intermediary has a significant impact on its administrative costs. There may be significant economies from consolidating the processing of certain types of bills (e.g., Home Health) with a single contractor. However, further analysis of this issue will be required to determine how this type of consolidation should be designed.

Recommendations

In light of our experience in evaluating both the Part A and Part B experiments, we offer the following recommendations.

Recommendation 1. The practice of competitive Medicare contracting should be expanded. HCFA's system of monitoring contractor performance and the use of both liquidated damages and incentive payments should continue.

Recommendation 2. It is reasonable for competed contracts to have options for extensions. However, when a fixed price contract is involved, the option year price should be determined by a formula based upon inflation in an index of input prices. Open ended negotiation of option year prices fails to protect the contractor from excessive cost cutting zeal by the government and it fails to protect the government from excessive pricing by an incumbent.

Recommendation 3. HCFA should develop systematic documentation of costs which are associated with changes in the scope of work of contractors. This documentation should embrace both traditional cost reimbursed contractors (for departures from beginning-of-the-year estimated budgets) and changes in the scope of work negotiated with fixed price contractors. The goal of this documentation should be to allow HCFA to develop better estimates of reasonable costs for scope of work changes under fixed price contracts.

Recommendation 4. Firms other than insurance companies should continue to be eligible to compete for Medicare contracts.

Recommendation 5. HCFA should continue to award competitive contracts on the basis of considerations of price, experience, and the quality of proposed work.

Recommendation 6. In future competitions, HCFA should develop very specific definitions of the deliverables which successful offerors can expect to receive from outgoing contractors. Especially in the case of major workload processing dependent files, HCFA should stipulate in the RFP whether they will be delivered in hard-copy or machine readable form.

These recommendations echo our previous recommendations from the Part B evaluation. In regard to Recommendation 1, we should note that an expansion in the use of competitive contracts has recently been mandated by Congress. HCFA now has legislative authority to award up to two competed contracts per year, provided that contractors in the lower 20th percentile of performance are selected as targets for competition. While it would be logical to extend competition to cover all contractors, there may be some short term benefit to the government in "rewarding " good contractors by freeing them from the rigors of competition -- if they continue to perform well.

Our rationale for Recommendations 2 and 3 have been explained in the preceding summary.

Recommendation 4 was previously offered in our Part B evaluation. We repeat it here for emphasis because rapid change in claims processing technology makes it likely that firms without previous Medicare experience may be able to make important contributions to future reductions in administrative costs. In this context, Recommendation 5 recognizes that the duties of a carrier or intermediary involve a combination of experience and technical innovation that must be weighed in concert with a favorable price. Recommendation 6 is the result of a dispute between contractors during the Missouri transition which had the potential for seriously delaying the start of operations. The following final report discusses these findings and issues in greater detail.

1.0 DESIGN AND IMPLEMENTATION

Medicare is a federal insurance program which pays for the health care costs of elderly and disabled persons in the United States. The program consists of two parts. Part A ("Hospital Benefits for the Aged and Disabled") provides coverage for inpatient hospital and nursing home services. Part B ("Supplemental Medical Insurance Benefits for the Aged and Disabled") covers charges for physicians, outpatient hospitals, home health visits, and medical appliances. Approximately 27 million persons are enrolled in each part of Medicare. In 1982, benefit payments under Parts A and B were, respectively, about $33 billion and $11 billion. The Medicare program is administered by the Health Care Financing Administration of the U.S. Department of Health and Human Services. HCFA, in turn, contracts with private health insurance companies to process Medicare claims in various geographic territories. In 1982, there were 68 Part A contractors (intermediaries) and 42 Part B contractors (carriers). Their direct administrative costs were, respectively, about $232 million and $459 million.

Title XVIII of the Social Security Act directed the Department of Health and Human Services (DHHS) to enter into contracts with organizations to administer the Medicare program which would result in neither profit nor loss to the contractor.[1] These cost reimbursement contracts were considered necessary in the beginning of Medicare to provide for efficient program implementation and to encourage contractor participation. At the present time, DHHS has over 100 cost reimbursement contracts with organizations to administer portions of the Medicare program in specified geographical areas.

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[1] In this report all remarks properly applying to entities which preceded DHHS or HCFA are attributed to the current organizations.

As the Medicare program matured, the government's focus began to shift from its original concentration on operational necessity to administrative costs and quality of contractor performance. In 1970, the staff of the Senate Finance Committee studied the administration of Medicare and noted the tremendous variance in performance and costs among contractors. It stated that performance variations were so great as to justify contract terminations and suggested that Part A intermediaries and Part B carriers might be compensated on other than a cost basis, such as incentive payments tied to performance or cost per claim.

In October 1972, Public Law 92-603 was enacted. It authorized DHHS to perform experiments in Medicare contracting via fixed price or incentive arrangements with contractors. During 1973 and 1974, the Perkins Committee (Advisory Committee on Medicare Administration, Contracting, and Subcontracting) studied these and other issues and concluded that overall administration of the Medicare program could be improved by reducing the number of contractors and by providing incentives to encourage improvement in contractor performance.

In 1974, HCFA began to take steps toward a more competitive form of contracting by seeking proposals from Part B carriers to undertake fixed-rate reimbursement contracts on a voluntary basis. Under these contracts, carriers would be paid a fixed dollar amount for each claim processed. Serious negotiations toward such contracts were undertaken with carriers in California, Maryland, Texas, Wisconsin, Rhode Island and western New York. One experimental fixed-rate contract was eventually undertaken with Blue Shield of Maryland. Negotiations with the other carriers, however, were unsuccessful in part because the carriers could see no benefit to themselves from voluntarily undertaking the risks of such contracts.

In the spring of 1977, HCFA began a new phase of experiments which departed sharply from its initial attempts at negotiated fixed-rate contracts. The new experiments involved: (1) a fixed payment for all contract administration with few opportunities for adjustments; (2) outright competition to be the carrier for a particular territory; (3) monitoring plans to measure contractor performance; (4) liquidated damage assessments (i.e., penalty payments) for inadequate performance; and (5) enhanced requirements for beneficiary services in the form of toll-free telephone service. Incentive payments for superior performance have been added to some of the more recent fixed price contracts.

In exercising its legislative authority to undertake fixed price contracting experiments, HCFA has attempted to test the viability of fixed price contracts in varied settings. Table 1.1 lists the various fixed price or fixed-rate experiments and their current status. HCFA's first wave of fixed price contracts were in the Part B program in Maine, upstate New York and Illinois. The Maine experiment was recompeted in 1981. The Illinois experiment was recompeted in 1982 and a new contractor began operations in early 1984. The upstate New York experiment has now ended and the contract has reverted to a traditional cost-reimbursed contract. HCFA's second wave of fixed price contracting experiments were directed at the Part A program. There are currently two Part A experiments, one in New York and the other in Missouri and the area of metropolitan Kansas City. In a final wave of experiments, HCFA undertook fixed price competitions for combined Part A/Part B systems in Puerto Rico and Colorado. The Puerto Rico procurement was abandoned due to lack of industry interest. The Colorado contractor began operations in August of 1983. The experiments in New York and Missouri are subjects of this paper.

Table 1.1: History of Medicare Contracting Experiments

Date of Experimental contract (Full Operational Period)	Service Area	Experimental Contractor	Type of Procurement	Experiment Ending Date and/or Current Status
12/1/76	Maryland (excluding parts of Metropolitan Washington, D.C.) (Part B)	Maryland Blue Shield	Negotiated Fixed Rate	12/1/78[a]
12/1/77	Maine (Part B)	Blue Shield of Massachusetts	Competitive Fixed Price	9/30/85[b]
7/1/79	Illinois (Part B)	Health Care Services Corp.	Competitive Fixed Price	3/31/87[c]
10/1/79	Upstate New York (Part B)	Blue Shield of Western New York	Competitive Fixed Price	9/30/82[d]
5/1/81	New York State (Part A)	Blue Cross/ Blue Shield of Greater New York	Negotiated Fixed Price	9/30/87[e]
7/1/81	Missouri and Metropolitan Kansas City (Part A)	Blue Cross of St. Louis	Competitive Fixed Price	6/30/85[f]
4/29/82[g]	Puerto Rico and Virgin Islands (Parts A & B)	None	Competitive Fixed Price	7/9/82[h]
8/1/83	Colorado (Parts A & B)	BC/BS Colorado	Competitive Fixed Price	9/30/86

[a]After 1978, contract reverted to cost reimbursement with Maryland Blue Shield.

[b]Original contract with Blue Shield of Massachusetts was for the period 12/1/77 to 9/30/81. Contract was recompeted in 1981 with BSM receiving the award. Second contract period was 10/1/81 to 9/30/84 which was extended to 9/30/85.

[c]Original contract from 7/1/79 to 9/30/83 was awarded to EDS Federal Corp. Contract was recompeted in 1982 with HCSC receiving the award. The EDSF contract was extended through March 1984 with HCSC beginning operations on 4/2/84.

[d]Original contract period was 10/1/79 to 9/30/82. It was not recompeted but reverted to cost-reimbursement contract with BSWNY effective 10/1/82.

[e]Original contract period was 5/1/81 to 4/30/84. It was not recompeted but extended to 9/30/87 in 1984.

[f]Original contract period 7/1/81 to 6/30/84 was extended to 6/30/85.

[g]Date of issue of RFP.

[h]Only one proposal was received and HCFA decided not to award a fixed-price contract. Contracts with existing cost-reimbursed contractors were extended.

Finally, the Deficit Reduction Act of 1984 gives HCFA further authority to competitively award up to eight contracts (two per year in 1984 and 1985 in both Part A and Part B) to replace any current contractor whose performance "over a period of time has been in the lowest 20th percentile ... as measured by the Secretary's cost and performance criteria." The language of the statute would seem to restrict these competitions to cost-reimbursed contracts. However, HCFA still retains its authority to engage in fixed price experiments under the 1972 law.

Description of the Fixed Price Experiments

Under the HCFA Fixed Price experiments, intermediaries and carriers enter into a multi-year fixed price contract for administering the program. It should be emphasized that the fixed price agreement covers only the firm's administrative costs; benefit payments to beneficiaries and providers are paid from an entirely separate set of funds not subject to a fixed price limitation.

Firms in the fixed price experiments compete by bidding a total price to conduct all claims processing activities for three to five years. The main incentive offered by these contracts is the right to retain as profit any residual contract payments which exceed the actual cost of claims processing. In addition, some of the experiments allow the contractor to earn incentive payments for exceptionally accurate and speedy claims processing. The experimental contracts are written and executed in a manner such that the contractor assumes various risks; for instance, the contractors are "at risk" for variations in claims volume over the period of the contract, input price inflation, costs of supplies and equipment, utilities, and taxes, and general variation in productivity. However, such government-initiated cost increases

as postage costs and social security taxes were included as provisions for adjustment in some of the fixed price contracts.[1] The most important risk arises from unanticipated variation in claim volume or workload. By agreeing to administer the program for a total fixed price, the contractors stand to lose if claim volume rises beyond the budget level.

To ensure that the fixed price contractors would not decrease their levels of service to maximize residual profits, the fixed price contracts specify a variety of performance standards. The contractor is assessed liquidated damages for each standard failed.[2] Some standards are "workload" related standards which specify absolute minimums of performance (e.g., 75% of all claims must be paid within 30 days), others are "functional" standards of

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[1]The fixed price approach to contracting for products/services can assume widely different characteristics. For example, fixed price contracts can be executed such that the contractor is limited to a fixed price per claim (as is the case with the CHAMPUS contracts), and thus is not held liable for estimating the total volume of claims. Similarly, a fixed rice contract for administering the Medicare program may specifically exclude such unavoidable changes in costs as postage increases, federal taxes, or social security withholding. In principle, contract costs could be limited by changes in the Consumer Price Index or similar economic indicators that are beyond the control of the contractor. However, such limits have not been used in the experiments which HCFA has funded to date.

[2]As a literary convenience, we occasionally use the term "penalty" as a synonym for "liquidated damages" in this report. Technically, the two terms are not equivalent. The Code of Federal Regulations provides for the use of liquidated damages in procurement contracts but notes that a penalty is unenforceable. Liquidated damages may be used only where both (1) the government may reasonably expect to suffer damage if the delivery or performance of work is delinquent, and (2) the amount of the damage is difficult to prove. A liquidated damage schedule is supposed to be set before the start of a contract. The schedule is supposed to be a reasonable forecast of just compensation in the event of a delay. The philosophy of liquidated damages is that they allow the government to recover the value of work that was not performed; they are not punishments. From an economic viewpoint, however, this distinction is unimportant. The economically relevant point is that both penalties and liquidated damages impose a cost which is a disincentive for poor performance. See Code of Federal Regulations, 41 Chapter 1-1.315 and Victorino, Louis D., Fundamentals of Government Contracting, Course Manual, Federal Publications Inc. (1978, no location), F-55 through F-57.

performance (e.g., telephone lines must be sufficient to assure that 60 percent of providers' calls are answered within three rings). While these standards have varied somewhat among the experiments, the contractor's performance is generally evaluated on a quarterly basis.

In undertaking the current Medicare fixed price experiments, HCFA sought to obtain claims processing services at a cost that was lower than traditional cost reimbursed contracts. HCFA anticipated that competitive fixed price contracts would create profit and loss incentives that would encourage contractors to find ways to save money. HCFA did not believe that traditional cost reimbursed contracts encouraged the type of careful operational scrutiny that a serious cost reduction program requires. In particular, HCFA expected that competitive fixed price contracts would promote the following response:

- Gains in Efficiency. Fixed price contractors were expected to search for combinations of labor and other inputs that could perform the required work at lower cost. Increased automation and streamlined production procedures were each expected to play a role in saving money.

- Reductions in Overhead and Joint Costs. Under the pressure of competitive bidding, contractors were expected to make favorable offers wherein the government would end up paying a smaller portion of the corporate overhead and joint costs than it pays under traditional contracts. In effect, contractors were expected to submit bids reflecting their marginal costs of doing Medicare work rather than the average total cost traditionally paid by Medicare.

- Reductions in Input Prices. Fixed price contractors were expected more actively to seek lower wages, rents, and other input prices. Relocation of operations into less expensive rural and suburban areas was anticipated.

All of these activities reflect normal managerial efforts which a firm might reasonably be expected to make in a profit and loss environment. Firms that undertake fixed price contracts could reasonably be expected to gamble on their ability to find internal economies in their operation and to seek lower input prices.

Missouri Part A Experiment

The Missouri experiment began in 1979 with the release of an RFP calling for fixed price proposals to process bills previously processed by the Blue Cross plans in Kansas City and St. Louis and by other smaller contractors in the area. A vigorous competition ensued between the Kansas City and St. Louis plans with the latter emerging as the winner. An important factor in the outcome of the competition was the fact that the St. Louis fixed price bid was substantially lower ($13.7 million) than the bid by Kansas City ($15.7 million).

The Missouri contract provided for a fixed amount of reimbursement subject to liquidated damages for poor performance. There were no provisions for incentive payments for good performance. Allowances would be made for changes in postage rates and FICA but not for changes in claims volume or number of providers. The contract period was from 1981 to 1984 with provision made for two one-year extensions of the contract at the option of the government. No conditions were attached to how the fixed price would be determined for these option years.

New York Part A Experiment

The New York Part A experiment offers a very different set of circumstances from the Missouri experiment. It began in 1979 when Blue Cross/Blue Shield of Greater New York (BCBSGNY), the national Blue Cross Association (BCA),[1] and the other six Blue-Cross-affiliated intermediaries in New York approached HCFA with a proposal for consolidating Part A operations in New York under a cost reimbursed contract. Under the proposed plan BCBSGNY would

[1]BCA is the prime contractor to HCFA for Part A bill processing. Blue Cross plans are affiliated as subcontractors to BCA.

undertake the bulk of bill processing work (it had historically provided extensive computer systems support to the upstate plans), while the upstate plans would serve as subcontractors responsible for provider relations and cost report settlement activities in their areas. The experiment was consequently framed in a negotiated setting rather than the competitive setting of the Missouri experiment. This proposal resulted in a negotiated contract providing for a fixed amount of reimbursement subject to liquidated damages (for poor performance) and incentive payments (for good performance). In addition to the standard allowances for postage and FICA changes, the New York contract provided for an annual price adjustment if the rate of inflation exceeded seven percent. The contract period was for 1981 through 1984 with provision for one two-year extension of the contract at the option of the government. As in Missouri, the New York contract did not stipulate how the fixed price would be determined for these option years.

Evaluation Protocol

In the process of evaluating the fixed price experiments in Missouri and New York, Abt Associates Inc. and its subcontractors, Troiano, Connolly and Company, engaged in the following types of research activities:

- Site Visits - Operations. Operations of the two fixed price contractors were examined by visits to their main claims processing sites. In addition, four comparable cost-reimbursed intermediaries were selected as comparison sites. These four contractors' operations were also examined with the same site visit methods.

- Site Visits - Audits. A series of fact-finding visits to the audit sites of the fixed price contractors was conducted by teams of Certified Public Accountants with extensive auditing experience in Medicare and Blue Cross rate setting. These visits were designed to examine whether the audit processes of the contractors had changed in response to the financial incentives of fixed price contracting. Particular attention was given to discovering any changes in the audit program procedures; qualifications and staffing of the audit areas; and the timeliness of cost report settlement activities.

- Analysis of Cost and Performance Data. Program data on the cost and performance of all Medicare intermediaries were examined for the period 1976-1983. The costs of fixed price contractors were compared to other contractors using various statistical methods. In addition, levels of benefit payments were examined in relation to the contractor's level of administrative cost.

- Review of HCFA's Methods of Awarding Contracts. All phases of HCFA's award processes for the fixed price contracts were reviewed. We examined the negotiation process in New York and the proposals submitted by the bidders in Missouri as well as HCFA's methodology for scoring these proposals. Extensive discussions were held with HCFA staff to learn about the rationale of the current award process, its history of development, and alternative approaches that were or are being considered.

- Review of HCFA's Methods of Monitoring Intermediary Performance. HCFA's current system of monitoring intermediary performance was reviewed along with its history of development.

- Informal Survey of Provider Groups. An informal telephone survey of selected provider professional associations in the experimental areas was conducted. These groups were asked to assess the current level of service they received from the fixed price contractors. Other questions were specifically tailored to specific programs and/or conditions applicable to each area.

The remainder of this chapter discusses the Missouri and New York experiments in greater detail. Attention is given to the origins of the fixed price contracts, the performance of the former contractors in both states, the characteristics of the bidders and the competitive award methodology in the Missouri procurement, and the activities of both contractors during the transition and their performance immediately after fixed price operations began.

1.1 The Fixed Price Experiment in Missouri

The Missouri and metropolitan Kansas City experiment was HCFA's fourth competitive fixed price procurement and its first involving Part A of

Medicare. This section details the procurement process for the Missouri experiment. The discussion focuses on five major areas:

- bid solicitation and proposals received;
- key features of the RFP and contract;
- perceptions of bidders and non-bidders;
- historical performance of incumbent intermediaries; and
- evaluation criteria and proposal scores.

Bid Solicitation and Response

On January 31, 1979, HCFA released its RFP for the Missouri experiment. The RFP was sent to all Medicare contractors and was announced in the Commerce Business Daily (CBD). Forty-seven other organizations requested and were furnished copies of the RFP. The original RFP provided for a pre-proposal conference in Kansas City on March 13, 1979, with proposals due eight weeks later on May 7, 1979. The majority of conference attenders were Blue Cross/ Blue Shield plans that seem to have had a general interest in competitive procurements rather than an active interest in bidding on this contract.

Proposals were received from only two firms, Blue Cross of Kansas City and Blue Cross Hospital Service, Inc. of Missouri (St. Louis Blue Cross), both incumbent intermediaries in the experimental area. Bids were not received from two other incumbents in the area, Aetna Life and Casualty and Mutual of Omaha. Upon completion of its evaluation process, HCFA began negotiations with the offerors concerning their primary and alternate proposals; both had submitted an alternate proposal specifying a reduction in the field audit staff of 30 auditors required by the RFP. HCFA then requested best and final offers from the bidders.

In early June 1979, the Blue Cross Association (BCA) and the American Hospital Association (AHA) instituted court action to stop the procurement which resulted in a decision enjoining the Secretary from proceeding with the procurement. HCFA appealed in February 1980, and received a favorable decision by June 1980.

Because of the elapsed time between the injunction and its removal, HCFA issued an updated RFP on September 19, 1980, to the two original offerors (Kansas City and St. Louis Blue Cross) and requested their best and final offers by October 17, 1980. Table 1.2 lists the procurement milestone dates based on the original and the revised RFP.

Key Features of the Fixed price Experiment in Missouri and Metropolitan Kansas City

The Missouri Part A experiment closely resembled the key features of the three fixed price procurements which HCFA had already begun in Medicare Part B. The design of the procurement reflected lessons learned from the other experiments as well as the special requirements of Part A administration. The key features of the Missouri RFP were the following.

- Period of Performance. The intermediary would serve the area for a period of 36 months through June 30, 1984. There was a two-phased implementation period beginning at procurement award on November 10, 1980 with the cost report settlement function becoming operational on February 1, 1981, and all other functions including claims processing becoming operational on July 1, 1981. Provision was made for two one-year extensions of the contract at the option of the government. No conditions were attached to how the fixed price would be determined for these option years.

- Type of Contract. HCFA would award a total fixed price contract to include all of the intermediary' costs of providing Part A administration. There was no specific allowance made for profit or loss: the intermediary would be obliged to absorb any losses and would retain any profit resulting from the contract.

Table 1.2: Milestones in the Missouri and Metropolitan Kansas City Experiment

Milestone	Date
Original RFP	
RFP issued	January 31, 1979
Question and answer period	January 31 to April 11, 1979
Pre-proposal conference (Kansas City)	March 13, 1979
Latest proposal submission date	May 7, 1979
HCFA evaluation of proposals	May 7, 1979 to June 30, 1979
Announcement of award	July 2, 1979
Revised RFP	
RFP issued	September 19, 1980
Question and answer period	September 22 to October 8, 1980
Latest proposal submission date	October 17, 1980
Evaluation of proposals	October 17 to November 7, 1980
Announcement of award	November 10, 1980
Contract negotiations	November 12 to December 31, 1980
Implementation dates	
Phase 1: Cost report settlement function	February 1, 1981
Phase 2: All other functions (including claims processing)	July 1, 1981
Operational period	July 1, 1981 to June 30, 1984

- Performance Standards. HCFA would review intermediary performance during the operational period using a monitoring plan modeled after the Contractor Performance Evaluation Program (CPEP). CPEP reviews could be conducted annually, semiannually, or quarterly depending on the level of performance of the contractor. Liquidated damages could be assessed based on both subjective and objective reviews by HCFA and in conjunction with a complex matrix of point scoring and degree-of-failure factors.

- Liquidated Damages. HCFA would assess liquidated damages for failure by the intermediary to be deemed operational and for failure to meet CPEP functional area criteria and statistical standards during the operational period. The total liquidated damages to be assessed during the operational period would not exceed 10 percent of the total contract price (later determined to be $1,368,232 based on winning bid price) over the life of the contract. Seventy-five percent of the operational period liquidated damages could be assessed for failures of the CPEP functional area criteria and twenty-five period for failure of CPEP's statistical standards. Assessments were lowest in the first review period (July 1, 1981 to September 30, 1981) at 0.29 percent of contract price, highest in the second and third review periods (October 1, 1981 to September 30, 1983) at 3.5 percent of contract price each year, and lowered in the fourth review period (October 1, 1983 to June 30, 1984) at 2.69 percent of contract price. Liquidated damages are a unique feature of fixed price experiments; under existing legislation, they cannot be assessed against traditional cost-reimbursed intermediaries.

Perceptions of Bidders in Missouri

To gain a fuller understanding of the procurement process in the Missouri/metropolitan Kansas City experiment, Abt Associates has conducted extensive interviews with senior executives representing both bidders. We have also interviewed executives of other intermediaries in the area which might have been expected to bid.

By far, the strongest factor which motivated both St. Louis and Kansas City in bidding was their desire to protect what they saw as their own territories. Both had been intermediaries since the beginning of the Medicare program and each had acquired good reputations with HCFA. In both plans, Medicare Part A represented a sizeable portion of corporate business. In

contractors probably discouraged competition. Aetna's unit cost per bill in fiscal 1978 was $6.37 nationally, and $8.01 and $6.61, respectively, in its Peoria, IL and Memphis, TN field offices. Mutual of Omaha's cost per bill in 1978 was $6.35. Both commercial intermediaries' unit costs were well above the national average of $5.49 in fiscal 1978. These differences in cost, together with the at-risk provisions of a fixed price contract, no doubt played a role in discouraging commercial insurance companies from bidding.

Another factor which dissuaded some potential bidders from participating in this procurement was the rather stringent audit requirements in the RFP. These included a mandated staff of 30 full-time auditors with an overall average of three years of Medicare audit experience. Also included were specifications on the number and duration of field audits by provider type and, for hospitals, by the number of beds. HCFA viewed these requirements as a safeguard against a fixed price contractor attempting to cut costs by reducing field-audit activities. Some potential bidders viewed these requirements as unnecessarily rigid and costly. Even the two bidders submitted alternate proposals (rejected by HCFA) during both the initial 1979 and the 1980 "best and final" solicitations which proposed audit staffs below HCFA's RFP requirements.

The Missouri fixed price experiment, at the time, attracted the least number of bids of any of HCFA's competitive procurements. It was successful, however, in eliciting responsive bids from two experienced Medicare intermediaries who were incumbents in the experimental area. Both offerors enjoyed good reputations with HCFA and had low administrative costs in relation to the national average. Both bidders submitted price proposals which were substantially below their reported costs under cost reimbursement contracts. Of the three areas evaluated to score proposals, price was the determining factor in the award. St. Louis Blue Cross won the competition with a bid

price which was 12 percent and almost $2 million below Kansas City's. These bids were obtained despite misgivings on the part of both offerors about the risks they were asked to assume for unpredictable factors such as bill volume and number of providers. The experiment enabled HCFA to gain its first experience in competitive fixed price procurements for Part A intermediary services.

Historical Performance of Incumbents in Missouri

From the inception of the Medicare program in 1966, two Part A intermediaries serviced the majority of providers in the Missouri experimental area. Blue Cross Hospital Service Inc. of Missouri (St. Louis Blue Cross) serviced over 500,000 Medicare beneficiaries and about 145 providers in the eastern two-thirds of Missouri in 1980. Blue Cross of Kansas City serviced over 225,000 beneficiaries and about 80 providers in the northwest corner of Missouri and Johnson and Wyandotte counties in Kansas in 1980. Mutual of Omaha, Aetna Life and Casualty, and HCFA's Division of Direct Reimbursement together serviced about 40 providers in the experimental area. Combined, St. Louis Blue Cross and Kansas City Blue Cross processed over 955,000 bills with benefit payments of over $680 million in fiscal year 1980. Their total administrative costs for that year exceeded $4.5 million.

Although the sizes of their service areas and workloads differed considerably, the performance of the intermediaries in St. Louis and Kansas City was in many respects quite similar. Table 1.3 contains statistics for selected performance indicators for the two contractors and national averages (where available) for the three years immediately preceding the experiment. In the unit cost per bill area, both contractors were below the national averages, with St. Louis' costs remaining fairly stable over the three years while Kansas City's cost increased in 1979 and took a sharp drop in 1980. In

Table 1.3: Performance Indicators of Incumbent Contractors in Missouri

Performance Indicator	Kansas City Fiscal Years			St. Louis Fiscal Years			National Averages Fiscal Years		
	1978	1979	1980	1978	1979	1980	1978	1979	1980
Total Unit Cost per Bill	$5.16	$5.35	$4.63	$4.97	$4.74	$4.50	$5.49	$5.53	$5.40
Productivity per Person-Year	4,846	5,390	6,417	5,755	6,464	7,056	5,056	5,540	6,478
Error Rates - Inpatient									
Consistency	0.145	0.120	0.000	0.062	0.026	0.000	0.192	0.151	0.166
Utilization	3.083	2.758	2.680	2.380	2.656	1.881	2.189	1.969	1.961
Total	3.205	2.878	2.680	2.441	2.682	1.881	2.381	2.120	2.127
Mean Intermediary Processing Times (Days)									
Inpatient	6.052	6.253	4.253	7.583	5.194	7.960	8.640	8.381	7.831
Outpatient	10.169	10.813	10.407	10.152	8.490	8.442	10.144	10.112	10.209
SNF	10.327	10.326	10.517	22.448	14.959	16.443	17.176	20.602	16.105
HHA	10.958	21.144	7.928	12.222	11.278	11.453	15.206	14.538	15.049
Cost Report Settlement									
Hospital:									
% settled in one year	NA	85.2	83.6	NA	97.4	90.4	NA	70.5	NA
% settled in two years	NA	100.0	100.0	NA	100.0	100.0	NA	96.1	NA
SNF:									
% settled in one year	NA	84.6	84.6	NA	92.9	87.5	NA	79.0	NA
% settled in two years	NA	100.0	100.0	NA	100.0	100.0	NA	93.5	NA
HHA:									
% settled in one year	NA	85.7	100.0	NA	100.0	100.0	NA	84.5	NA
% settled in two years	NA	100.0	100.0	NA	100.0	100.0	NA	98.3	NA

NA -- Not available at time report was prepared.

the productivity area, Kansas City was slightly below the national average while St. Louis was well above the national average for the three years preceding the experiment. In the bill error rate indicator, both contractors were below the national average for consistency errors while Kansas City was above the national average for utilization errors each year and St. Louis managed to drop below the national average for utilization errors in 1980. Both contractors' performance was rather erratic on average claims processing times. Kansas City's mean processing times decreased for inpatient and home health bills and increased for outpatient and nursing home bills from 1979 to 1980. St. Louis's performance improved in the outpatient, SNF and HHA categories but declined in the inpatient area over the same period. Generally, both contractors' processing times were close to or below the national averages during these three years.

Finally, in the cost report settlement area, both intermediaries were above the national averages in 1979. In terms of direct comparisons, St. Louis exhibited superior performance to Kansas City for every provider type in 1979 and 1980.

Thus we have seen that while the two contractors differed in some performance indicators, their performance overall was quite similar and in most cases exceeded the national averages. In general, the performance of both contractors before the experiment can be called above average. As discussed previously, the Kansas City regional office considered all contractors in Region VII to be good performers. Their selection of Missouri as the area to conduct the experiment was based more on their perception of potential savings accruing from a competitive procurement than on the actual performance of the incumbent contractors in the area.

Proposal Evaluation Criteria

This section discusses the criteria which HCFA used in judging proposals in the Missouri procurement. Criteria were essentially the same as in other fixed price competitions. Price became the most important factor governing the award simply because both bidders were well matched in terms of experience and technical capabilities.

Proposals were initially screened for responsiveness and then subjected to a formal evaluation in three major areas: the quality of the technical proposal, corporate experience, and price. Each of the three components was weighted according to HCFA's perception of their relative importance in overall intermediary performance. The weights used in the Missouri/Metropolitan Kansas City evaluation were published in the RFP as an indicator to bidders of how to structure their proposals. Table 1.4 compares these weights to those used by HCFA in previous and subsequent fixed price experiments. In Missouri, price was weighted to account for 45 percent of the total score. The technical score for the quality of the written proposal was weighted at 30 percent of the total and experience was weighted 25 percent. As shown in the table, the Missouri competition placed slightly less weight on experience and more weight on the technical score than have other procurements.[1]

[1]HCFA officials have pointed out that the scoring method on the Maine I, New York, Illinois and Missouri procurements inadvertently gave price an effective weight of up to 55 percent. In these procurements, price was evaluated by assigning the low bidder all the points and the remaining bidders a percentage of the total points based on the ratio of the winning price to each bidder's price. However, technical and experience points were not prorated in a similar way; the weighting factors were simply applied to the raw scores. This method actually gave price a greater weight since the total points for experience and technical were not allocated. In the Maine II judging this was corrected and scores in all three categories were prorated relative to the winner in each category to obtain the final score. This minor weighting discrepancy has not affected the determination of the winners in any of these competitions.

Table 1.4: Weighting Factors Used in HCFA's Fixed Price Experiments

	Technical	Experience	Price	Total
Maine I	30	30	40	100
Maine II	25	35	40	100
Illinois I	20	35	45	100
Illinois II	30	35	35	100
New York (Part B)	15	35	50	100
Missouri	30	25	45	100

Proposal Scores and Contract Award

Table 1.5 summarizes the proposal scores of the two bidders in the Missouri experiment. Technical and experience scores for both bidders were fairly close in this competition with the result that price was the decisive factor. Based on HCFA's own estimate of bill volume of 3,517,500 over the three years of the contract, price varied from $3.92 per bill for St. Louis to $4.47 per bill for Kansas City. These estimated unit price figures represented considerable savings to HCFA when contrasted with unit cost per bill in fiscal year 1980 of $4.50 for St. Louis and $4.63 for Kansas City.

Table 1.5: Comparison of Scores and Prices in the Missouri/Metropolitan Kansas City Experiment

	Evaluation Rank Scores					
Bidder	Technical	Experience	Price	Total	Total Price*	Price Per Bill
Blue Cross of Kansas City	2	1	2	2	$15,715,095	$4.47
St. Louis Blue Cross	1	2	1	1	$13,791,100	$3.92
Maximum Possible Points	300	250	450	1000		

* Includes implementation/transition costs. Based on 1980 prime proposals.
**Based on HCFA's estimate of a bill volume of 3,517,500.

Technical Evaluation

The technical component of the offeror's written proposal was evaluated to: (1) determine the offeror's understanding of the related program requirements; (2) assess the effectiveness of the organization to accomplish the objectives; (3) judge the qualifications of personnel assigned to key positions. The technical proposals were reviewed in sections by review team members of HCFA central and regional office staff with relevant experience. Proposals were evaluated in the following areas:

1. implementation and transition;
2. bill processing;
3. utilization review and PSRO liaison;
4. provider reimbursement and cost report settlement;
5. beneficiary services;
6. fiscal management;
7. administrative management; and
8. key personnel.

The technical proposals were scored in each of these areas by the use of checklists containing a total of 754 questions. The questions were stated in such a way that the evaluators could answer them "yes/no" or "not applicable." The checklist approach was used to catalog the system capabilities and standard procedures which the bidder asserted would be followed.

Table 1.6 presents a summary of the rank scores the two offerors obtained for the eight sections of the technical evaluation which HCFA conducted in June 1979. St. Louis received a total score of 267.71 points or 89.2 percent of the available points compared to the Kansas City score of 253.77 or 84.6 percent of available points. St. Louis outscored Kansas City in six of the sections: implementation and transition, bill processing, utilization review/PSRO liaison, provider reimbursement and cost settlement, fiscal management, and administrative management. Kansas City was the top

Table 1.6: Summary Scores for Technical Evaluation in the Missouri/Metropolitan Kansas City Experiment

Technical Area	Points Available* Rank Order	Rank Scores St. Louis	Rank Scores Kansas City	Difference in Scores Relative to Points Available
Implementation and transition	2	1	2	.02
Bill processing	3	1	2	.04
Utilization review/PSRO liaison	7	1	2	.03
Provider reimbursement & cost report settlement	1	1	2	.04
Beneficiary services	7	2	1	.15
Fiscal management	5	1	2	.23
Administrative management	4	1	2	.11
Key personnel	6	2	1	.02
1979				
Total technical points	300.0	267.71	253.77	.05
Percent of total available		89.2	84.6	
1980				
Total technical points	300.0	277.37	260.02	.06
Percent of total available		92.5	86.7	

*Rank = 1 indicates largest number of points.

scorer in only two sections: beneficiary services and key personnel. At the request of HCFA, we do not report the exact scores received or available points. Only rank scores are reported. To indicate the closeness of the competition, however, we have computed the difference in scores relative to the points available. In five areas, this relative difference in scores is less than .05, indicating a close competition. Of the eight areas evaluated, differences greater than .05 occurred in only three areas: beneficiary services, fiscal management, and administrative management. All of these were relatively low priority areas in the scoring methodology and St. Louis won two of these three areas. The relatively close scores achieved by the bidders in the five other areas of the technical evaluation suggests either that the checklist was not sensitive enough to identify differences in the quality and completeness of the proposals or that the proposals were of almost equal merit in these areas. The relatively similar performance of both incumbent contractors described earlier suggests that the latter was most likely the case.

It should be noted that the technical evaluation's scores changed somewhat from the time of HCFA's initial evaluation in June 1979 to the final evaluation of the "best and final" offers submitted by the two bidders in October 1980 after the court injunction was lifted. This final evaluation upon which the contract award was based resulted in a total technical proposal score of 277.37 points for St. Louis and 260.02 points for Kansas City. Here the point spread between the two total technical evaluation scores increased to 17.35 points while the differences in the percentage of total points won increased insignificantly from 4.6 percent in 1979 to 5.8 percent in 1980.

Our review of both offerors' original proposals (prime and alternates) submitted in 1979 and their best and final proposals (prime and alternates)

submitted in 1980, revealed a sharp difference in the quality of the overall contents. St. Louis' proposals were well indexed and organized and, in our opinion, provided more detailed and relevant discussions of the key aspects of intermediary responsibilities. Kansas City's proposals on the other hand, were poorly organized and much less detailed in critical operational discussion areas. Kansas City also appeared to include a good amount of extraneous information not required by the RFP such as three claims projection schedules labeled "most likely," "low," and "high" and population projections for the experimental area broken down by age and Medicare eligibility status. In our opinion, including such unsolicited data in a proposal represents a strategic mistake because it makes important material harder to find and suggests inexperience in competitive procurements. This is especially true regarding claims volume projections where the offerors were clearly at risk and could achieve no advantage by including such information in the proposal. In light of the rather striking qualitative differences in the proposals submitted by the offerors, it is somewhat surprising that St. Louis outscored Kansas City by only 17 points in the final evaluation. However, this relatively small difference in point scores may attest to the diligence of the HCFA review teams and their willingness to search the entire Kansas City proposal for relevant discussion of key areas which may have been misplaced in the text.

The apparent differences in the quality of the proposals which we observed in our review seem to be confirmed by discussions with both offerors' executive and management staffs. While this was the first competitive procurement in which either contractor had participated, St. Louis had the advantage of a subcontractor (Management Data Communications Corporation [MDCC]), with extensive experience in competitive government health care

procurements. In its original proposal, St. Louis had bid MDCC as its EDP subcontractor on a facilities management basis throughout the term of the contract. In its best and final proposal submitted in 1980, St. Louis decided to buy MDCC's automated claims processing system (ACPS) outright and run the system in-house on its own hardware with close technical support from MDCC during the installation and implementation period. MDCC had considerable experience and varying degrees of success in bidding on government procurements in Medicare, Medicaid, and the CHAMPUS program. MDCC was a full partner with St. Louis in the preparation of their original proposal and supplied support during the updating process which preceded the submission of the best and final offers in 1980. Kansas City, on the other hand, relied only on its own staff which was inexperienced at proposal writing. Although the technical evaluation scores were not the determining factor in contract award in this procurement, it is apparent from our review of proposals that bidders with experience in proposal preparation (either in-house or acquired from outside sources) begin the competitive process with a distinct, although difficult to quantify, advantage over less experienced firms.

Firm Experience

Experience was worth 25 percent of the total points or 250 of the 1,000 available award points. Table 1.7 describes the experience weighting scheme which HCFA used in this evaluation. The type of experience evaluated ranged from "Part A" weighted at 1.0, through "audit firm experience with Medicare principles of reimbursement and cost-basis audits" weighted at 0.8, to "other related experience" weighted at 0.65. Thirty-six months of experience, ending October 1, 1980, were considered. For existing Medicare contractors, the factor used to measure the quality of firm performance was the Annual

Contractor Evaluation Reports (ACERs). For any other bidders, an extensive questionnaire was to be used to obtain a measure of performance quality. If an offeror planned to subcontract more than 25 percent of the audit function, as did Kansas City using Touche Ross and Company, the company experience of the subcontractor was also evaluated and scored.

Scores obtained by both bidders in the evaluation of experience in HCFA's initial review in June 1979 and its final review of the best and final offers in October 1980 are listed in Table 1.8.

The scores displayed in Table 1.8 indicate that while the total experience scores for both offerors increased between the two evaluation periods, the St. Louis increase was proportionately larger than Kansas

Table 1.7: HCFA Weighting Factors for Evaluation of Firm Experience in the Missouri/Metropolitan Kansas City Experiment

Total of Experience	Experience Weighting Factor	Maximum Points Without Audit Subcontractor	Maximum Points With Audit Subcontractor
Medicare Part A	1.00	250.0	250.0
Medicaid: functional responsibilities equivalent to Part A	0.90	255.0	231.5
Audit firms having experience with Medicare principles of reimbursement and cost-basis audits	0.80	200.0	Not applicable
Medicare Part B	0.75	187.5	203.75
Other health insurance experience	0.70	175.0	194.5
Other related experience	0.65	162.5	185.25

Table 1.8: Scores for the Evaluation of Experience in the Missouri/ Metropolitan Kansas City Procurement

Time Period June 1979	Points Available	St. Louis	Kansas City	Range of Points
Original prime proposals	250	233.68	239.56	15.88
Percent of total available		89.5	95.8	6.2
October 1980				
Best and final prime proposals	250	241.80	245.43	3.63
Percent of total available		96.7	98.2	1.5

City's. St. Louis was able to narrow the point spread from almost 16 points in 1979 to about 4 points in 1980. While the increases in experience scores were due to improved performance by both contractors in the intervening months between the evaluations, the significant increase by St. Louis resulted from the fact that HCFA's scoring methods gave relatively more weight to areas where St. Louis improved and relatively less weight to areas where Kansas City improved.

Price

In the Missouri/Metropolitan Kansas City procurement, the price bids were evaluated separately from the technical proposal. The proposal with the lowest bid was rated the highest in the price evaluation and it was awarded all available points. All other bidders would be awarded points for price on the basis of how well their price compared to the winning price (i.e., the other bidders would be awarded a proportion of the total points available based on the ratio of the winning bid to their bid).

In this procurement, both incumbents submitted prime and alternate proposals during the initial submission period in June 1979, and in the final submission period in October 1980, after the court injunction had been lifted. Both sets of alternate proposals were predicated on the audit staff below the 30 full-time auditors that HCFA had mandated in the original RFP and in subsequent revision. HCFA rejected both offerors' alternative proposals on the grounds that "no compelling rationale or evidence was presented to convince us to reduce the significant quality safeguards contained in the audit requirements."[1]

In the June 1979 solicitation, the St. Louis bid price of $12.1 million on the prime proposal was approximately 12 percent below Kansas City's price of $13.7 million. Table 1.9 summarizes these bids. HCFA projected the unit cost of these bids to be $3.23 for St. Louis and $3.66 for Kansas City based on an estimated workload of 3,762,000 bills over the term of the contract. Both bids were substantially below the incumbents' unit cost per bill of $4.97 for St. Louis, $5.16 for Kansas City, and the national average unit cost of $5.49 in fiscal year 1978. HCFA estimated savings of $5,686,000 in administrative costs over the three year operating term under a contract awarded to St. Louis Blue Cross. Under the weighting scheme which HCFA used to evaluate the price proposals, St. Louis, the low bidder, received all the available points for price--450, while Kansas City received 397.30 points.

[1]In discussions with Abt Associates, HCFA staff were quite candid about the conceptual problem which they faced in setting the audit standards for the RFP. HCFA wanted to purchase a satisfactory level of "effective auditing." Since this concept is hard to measure or monitor, HCFA imposed a relatively simple requirement for a particular number of auditor hours. Alternate proposals from the bidders attest to their belief that good auditing could be done effectively with less labor than HCFA's specification.

Table 1.9: Bid Prices in the Missouri/Metropolitan Kansas City Experiment

	St. Louis	Kansas City	Percentage of Total Firm Fixed Price
June 1979 Best and Final Offers -- Prime Proposals			
A. Implementation			
1. 7/1/79 to 9/30/79	$ 486,233	$ 550,735	4%
B. Operations			
1. 10/1/79 to 12/31/79	607,791	688,419	5
2. 1/1/80 to 9/30/80	2,552,722	2,891,360	21
3. 10/1/80 to 9/30/81	3,282,072	3,717,463	27
4. 10/1/81 to 9/30/82	3,889,863	4,405,881	32
5. 10/1/82 to 12/31/82	972,466	1,101,471	8
6. 1/1/83 to 5/31/83	364,674	413,052	3
Total	$12,155,821	$13,768,381	100%
October 1980 Best and Final Offers -- Prime Proposals			
A. Implementation			
1. 11/10/80 to 1/31/81	$ 413,733	$ 471,453	3%
B. Operations			
1. 2/1/81 to 6/30/81	827,466	942,906	6
2. 7/1/81 to 9/30/81	2,482,398	2,828,717	18
3. 10/1/81 to 9/30/82	3,723,597	4,243,076	27
4. 10/1/82 to 9/30/83	4,413,152	5,028,830	32
5. 10/1/83 to 6/30/84	1,517,021	1,728,660	11
6. 7/1/84 to 9/30/84	275,822	314,302	2
7. 10/1/84 to 11/30/84	137,911	157,151	1
Total	$13,791,100	$15,715,095	100%

In the October 1980 solicitation, the prime proposal bids ranged from $13.7 million for St. Louis to $15.7 million for Kansas City as shown in Table 1.9. As in 1979, St. Louis's bid price as 12 percent below Kansas City's. The projected unit cost was $3.92 for St. Louis and $4.47 for Kansas City based on HCFA's revised workload estimate of 3,517,500 bills over the term of the contract. Both bids were again well below the incumbents' unit cost per bill of $4.50 for St. Louis, $4.63 for Kansas City, and the national average unit cost of $5.40 in fiscal year 1980. HCFA estimated savings of $2,002,500 in administrative costs over the three year operating term under a contract with St. Louis Blue Cross. St. Louis received all available points for price of 450 while Kansas City received a proportionate share of 394.91 points.

Table 1.10 contains a summary of the scores obtained by the bidders in both evaluation periods of the Missouri/Metropolitan Kansas City procurements. In both of these evaluations, St. Louis won in the technical and price

Table 1.10: Summary Scores for Bidders in the Missouri/Metropolitan Kansas City Procurement

	Points Available	St. Louis	Kansas City
June 1979 Best and Final Offers -- Prime Proposals			
Technical	300	267.71	253.77
Experience	250	223.68	239.56
Price	450	450.00	397.30
Total	1,000	941.39	890.63
October 1980 Best and Final Offers -- Prime Proposals			
Technical	300	277.37	260.02
Experience	250	241.80	245.43
Price	450	450.00	394.91
Total	1,000	969.17	900.36

areas and Kansas City was the top scorer in the experience area. Although St. Louis would have won on price alone in both evaluations, it is interesting to note that both offerors' total points in the technical and experience areas improved between the two evaluation periods, while the price spread narrowed slightly.

Pricing Strategy

St. Louis Blue Cross officials told us that in pricing their proposal they first costed everything according to the Final Administrative Cost Proposal (FACP) methodology which is the traditional means of charging the government for Medicare costs associated with cost reimbursed contracts. Then they looked at all the areas of corporate overhead to see where reductions in allocations to Medicare could be made without "unfairly" penalizing other kinds of business. The bid price was then reduced to reflect these reallocations.

Kansas City officials told us that they had no intention of "buying" the business, meaning they were not willing to bid a price which departed significantly from traditional formulas for allocating overhead costs to Medicare. The apparent willingness of St. Louis to reallocate overhead charges and the apparent refusal of Kansas City to do so is one factor which may explain the almost $2 million difference in the prices bid by the two firms.

Another possible explanation for the apparently different pricing philosophies of the two bidders relates to the corporate commitment which Kansas City had made to developing a new automated bill processing system for Medicare Part A during 1979 and 1980. HCFA officials have indicated that development of the system had cost Kansas City about $2 million. The

intermediary had not charged the government for the development cost of the system because they considered it proprietary and intended to market it nationally. However, this explanation for the difference in the two bids is not entirely satisfactory when one considers that the St. Louis bid price also included their cost to purchase an automated system from MDCC. In our opinion, corporate flexibility with regard to pricing overhead costs remains as an important explanation of the cost difference.

In summary, the Missouri fixed price experiment resulted in a close competition between the states' two incumbent Medicare intermediaries. Both firms were highly experienced and both wrote competent technical proposals with the result that price became the deciding factor in determining the winner.

Transition Activities

The formal transition/implementation period began on November 10, 1980, when Blue Cross Hospital Service, Inc. of Missouri (St. Louis Blue Cross) was awarded the fixed price contract. The RFP provided for a two-phase implementation with the intermediary assuming responsibility for the cost report settlement function on February 1, 1981. All other intermediary activities including bill processing were to be implemented on July 1, 1981.

St. Louis Blue Cross, together with Management Data Communications Corporation (MDCC), the firm from which they obtained their new Part A processing system, prepared a detailed implementation plan listing all tasks and activities with their start and projected completion dates. There were hundreds of tasks and subtasks included in the implementation plan ranging from the testing of new automated systems to the purchase of furniture for newly hired staff. We discuss the most critical tasks in the following

sections. The assumption of another contractor's territory is always an involved and risky process for any intermediary, no matter what its size or experience or how the contract was awarded. The Missouri/Metropolitan Kansas City transition was made more complex by the fact that St. Louis was implementing a new Part A bill processing system at the same time that it was assuming responsibility for four outgoing intermediaries in the experimental area.

HCFA's Kansas City regional office reviewed the St. Louis implementation plan, suggested a number of task additions, recommended certain scheduling changes, and finally approved a revised plan based on its own views and that of the outgoing contractors. The regional office also established a formal monitoring program during the transition with regular meetings of all the involved parties. In addition, the regional office had one of its representatives on-site at the St. Louis plan for three or four months during the implementation. This on-site monitoring allowed HCFA to reduce the number of committee meetings during the transition.

Major Transition Tasks

- Site Selection

The selection of the main operational site was not a major issue for Blue Cross of St. Louis as it began its fixed price contract to serve the Missouri region. A suburban claims processing site and the creation of satellite sites in different parts of the state were both considered. In the end, the contractor decided to keep its Medicare operations at corporate headquarters in downtown St. Louis. The decision was based on two considerations. First, removal of Medicare to another site would have vacated a large part of the headquarters building, forcing the firm to either seek a tenant or charge the cost of this space to its private business. Second, a stable and trained labor force was already available in St. Louis, whereas the availability and cost of labor were problematic for other locations. Thus, the only space considerations St. Louis faced during the transition was the location of a field office in the Kansas City area housing that area's audit staff and a provider relations representative. A lease of this office space was secured by April 1981.

- Provider Relations

Immediately after the contract was awarded, St. Louis Blue Cross officials undertook an ambitious program of provider relations, especially in the northwestern corner of Missouri and in Wyandotte and Johnson counties in Kansas, the area serviced by Kansas City Blue Cross. These activities were aimed at allaying any fears of the area providers concerning their new intermediary and reassuring them of St. Louis' commitment to timely and accurate bill processing and fair and equitable cost report settlement. The activities included personal meetings with providers by St. Louis executives, including the plan president, mailings to all provider organizations in the experimental area, and formal workshops for provider business managers and staffs held throughout the area in May 1981. In spite of these activities, providers have told us that they were anxious about the transition because they did not have specific detailed information on claims processing procedures until shortly before the new intermediary took over.

On the whole, St. Louis' initial provider relations efforts can be viewed as moderately successful in limiting the amount of initial provider unrest concerning the change in intermediaries. Providers were informed about the changeover and began sending admission and start-of-care notices and bills to St. Louis Blue Cross in early June, as scheduled. There were no initial adverse media, beneficiary, or political reactions to the change in contractors. Some additional problems did arise, however, after the start of operations due to an initial slow down in bill processing. We discuss this problem below.

- Provider Audit and Cost Report Settlement

As stated earlier, the first area in which St. Louis had to be operational was provider audit and cost report settlement. Thus, between the contract award in November and the February start date, St. Louis had to hire additional auditors to handle the increased workload, implement an automated desk review program for selected types and sizes of providers, and generally ready itself to meet all of HCFA's provider audit and cost report settlement requirements as specified in the contract and RFP. Eleven additional auditors were hired from Kansas City's Medicare audit staff and located in a new St. Louis field office in Kansas City. These auditors, in essence, transferred plans and generally had responsibility for auditing the same providers as before.

St. Louis experienced no major problems in implementing the automated desk review program or in assuming full audit and cost report settlement responsibilities in February 1981. In fact, for some providers who had underpayments and who were, therefore, anxious to obtain early settlements of their cost reports, St. Louis arranged to perform the necessary activities before the required February start date.

- Systems Conversion

A Medicare contractor's claims processing system lies at the heart of its operations. The system is a configuration of computer hardware, software, clerical workers, computer operators and managers. The job of the system is to receive claims, verify a beneficiary's eligibility, verify the accuracy of

a provider's bill and its eligibility for payments under Medicare and finally pay or reject the claim. The system is supposed to exchange information among the contractor, the provider, and HCFA about the status of a claim during various stages of the claim handling process. Medicare claims processing systems are not entirely uniform. Each contractor has developed its own system within the guidelines of the Medicare program.

The systems conversion was the largest single task which had to be completed during the transition and the one most crucial to the overall success of the implementation effort. Since St. Louis Blue Cross had bid MDCC's Automated Claims Processing System (ACPS), the transition involved a major systems change from their former in-house Model A based system. Two major areas of bill processing, data entry and the query/reply process, were heavily impacted by this system change. In addition, all the major files from their own system (as well as from the outgoing contractors' systems) had to be converted to the MDCC specifications and tested in the new system. We discuss below some highlights of this conversion.

- Data Entry

The data entry function was a source of some initial problems during the St. Louis conversion. Under the MDCC system, data entry was on-line and interactive, meaning that the operator has access to major systems files against which keyed data is verified and corrected, if necessary. (St. Louis' former data entry application had been off-line and noninteractive and all but the simplest field edits were performed in the batch processing mode). On-line, interactive data entry, while considered state-of-the-art by claims processing experts, requires operators to exercise more judgment than straight sight keying applications and usually results in slower input of data, at least when it's first introduced. This occurred at St. Louis where officials reported that the entry time for provider bills doubled because they were interfacing with the on-line BEST file for beneficiary name and HIC number verification.[1] Another problem common with the introduction of on-line data entry is the tendency of the contractor (and especially the EDP subcontractor) to be overly optimistic concerning production rates. This problem occurred at St. Louis with the result that a large backlog of bills developed during the first few months of operations. It became necessary for St. Louis to hire additional data entry staff and even contract for outside support in the months immediately following the transition in order to cover this shortfall in productivity.

- Query/Reply Process

Under its former system, St. Louis had utilized the Blue Cross Association (BCA) network to transmit queries and receive replies. With the MDCC system, St. Louis installed a Programmable Magnetic Tape Transmission (PMTT) system directly to HCFA/Baltimore to perform this function. HCFA

[1]The BEST (Beneficiary State Tape) is a magnetic tape created by HCFA (usually every six months) which contains name, address, sex, HIC number, and eligibility data for all Medicare beneficiaries in a state.

assigned St. Louis two daily one-half-hour "windows" to transmit and receive queries and replies. St. Louis hired its own staff to operate the PMTT system.

Problems with the new PMTT system (described in a later section), caused chiefly by HCFA were to play a role in creating the backlog problems which St. Louis experienced after it went live on the new system in June.

- File Conversions

All major systems files from the outgoing intermediaries and from St. Louis' Model A system had to be converted to compatible format and loaded into the MDCC system. EDP systems differ in design and degree of automation among contractors but most Part A systems have, at a minimum, the major files described below in automated format.

- Open-Item File: This file contains all NOAs and SOCs awaiting query reply or for which final bills are outstanding. It is created from NOAs and SOCs received from hospitals, nursing homes, and home health agencies.

- Work In Process (WIP) File: In most systems this file consists of all bills which fail (suspend from processing) systems edits and audits.

- Beneficiary Detail File: This file contains identification (name, sex, HIC number, address) and eligibility data (Part A and B enrollment data) for beneficiaries residing in the intermediaries' service areas. Most contractors use the BEST tapes to create this file.

- Provider File: This file contains identification and licensure or certification data for providers serviced by the intermediary. In some systems it may also contain reimbursement data such as approved rates and medical review indicators to suspend all or certain types of billed services for a provider.

- Bill History File: This file usually contains detailed records of all bills processed by the intermediary. Records would include the bill ICN or DCN, date received, services and amounts billed, paid or denied, and check number. The number of months or years of history on the file will vary by intermediary.

A major area of dispute between St. Louis and Kansas City Blue Cross during the implementation concerned the format and medium of files which Kansas City was obligated to deliver to St. Louis. There were four major files which St. Louis had to obtain from Kansas City: the open-item file, the WIP file, the provider file, and the bill history file. All these files were automated at Kansas City Blue Cross and maintained as integral components of the automated bill processing system which was installed in October 1980. However, because Kansas City's new system was proprietary (HCFA had paid nothing for its development), Kansas City was unwilling to furnish St. Louis

with details of its data base construction free of charge. Kansas City was also unwilling to provide machine readable output from its data base in a format acceptable to St. Louis unless either HCFA or St. Louis paid for the programming cost and computer run time involved. Kansas City estimated it would cost $60,000 to produce machine readable output of its paid bill history for St. Louis. Both St. Louis Blue Cross and HCFA were unwilling to pay these charges.

As an alternative, St. Louis could create its own history file from the PATBILL and HCSSACL tapes available from Kansas City and HCFA.[1] Kansas City Blue Cross had used these tapes to create its own history files when it developed its automated bill processing system in 1979 and 1980 and it thought St. Louis should do likewise. St. Louis thought that using these tapes to build history would be too time-consuming an operation.

The dispute over the format and medium of Kansas City's history files eventually reached the level of both plan presidents without a resolution satisfactory to both sides. HCFA resolved the matter by deciding that since intermediaries are not required to maintain processed bill history in an automated form, it could only require Kansas City to provide its claims history to St. Louis in PATBILL tape format.

- System Testing

To test its file conversions and software, St. Louis utilized a dual approach; the first mandated by HCFA and the other optional. In May 1981, they ran the Intermediary System Test Package (ISTP) which HCFA had required in the RFP. The ISTP consists of a series of test bills prepared by HCFA which are designed primarily to test a contractor's query/reply process. St. Louis passed the ISTP and this determined the new system as acceptable to HCFA.

Also during May, St. Louis, at its own option, conducted a series of parallel runs of processed bills from its old Model A system in the new MDCC system. We were not able to obtain documentation on the results of these parallel runs but we do know that by July, St. Louis had identified over 100 problems with the new system which required correction. Some, if not most, of these problems must have been discovered during the parallel runs, but, evidently, they were not considered serious enough to delay the implementation. They were, however, to play a role in creating the backlog which St. Louis faced in the months following the implementation.

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[1]The PATBILL is a magnetic tape created by the intermediary containing records of all paid bills which is sent periodically to HCFA. The HCSSACL is a magnetic tape produced by HCFA, after processing an intermediary's PATBILL tape which lists all bills which failed the consistency and utilization edits (return to intermediary) and informs the intermediary of the status of all the remaining bills on the PATBILL tape.

- Toll-Free Telephone Service

The RFP mandated that the new contractor provide toll-free telephone service to providers in the consolidated service area (collect calls were to be accepted from beneficiaries). Since St. Louis Blue Cross was already providing this service in Missouri, it simply expanded the service area to include Wyandotte and Johnson Counties in Kansas. This was accomplished by the end of March 1981.

Under the terms of the fixed price contract, St. Louis Blue Cross had two milestones to meet in order to become operational. It first had to assume full responsibility for provider audit and cost report settlement activities by February 1, 1981. This milestone was met without any difficulty by St. Louis Blue Cross.

The second operations milestone was the assumption of all other intermediary activities, including bill processing, by July 1, 1981. In order to pass this milestone and be deemed "operational," the updated 1980 RFP listed specific processed and aged pending bill standards which had to be achieved in the four weeks immediately following the July 1 implementation date. Failure to meet these standards would result in liquidated damages assessed at $2.00 per bill for the volume of bills below the processing standards and $2.00 per bill for the volume of bills above the aged pending standard.

The specific operational status standards and St. Louis' performance against them are listed in Table 1.11. As the table indicates, St. Louis Blue Cross was deemed operational at the end of July 1981 by virtue of passing all of HCFA's processing and pending standards.

Table 1.11: HCFA Operational Status Standards for the Missouri/Metropolitan Kansas City Experiments

HCFA Standards	St. Louis Performance Week 1	Week 2	Week 3	Week 4
Inpatient bills--at least 5,000 per week	6,420	6,609	5,454	6,004
Outpatient bills--at least 6,000 per week	8,191	5,098*	3,180*	9,929
SNF bills--at least 100 per week	113	143	223	161
HHS bills--at least 600 per week	787	1,874	1,986	2,133
Percent pending 30 days or more--not more than 50 percent of total pending--end of week 4	--	--	--	23.5

*St. Louis was deemed not responsible for failing these standards since they were due to HCFA/Baltimore query/reply transmission problems.

Performance after the Transition

The Kansas City regional office has described the Missouri transition as "... in no way indicative of a completely successful transition."[1] This is because of the large backlog of unprocessed start-of-care (SOCs) and admission notices (NOAs) and provider bills which developed immediately after St. Louis began bill processing activities on the new MDCC system in early June. By the end of June, the pending bill count had reached 77,927. In June of the year before the transition, the combined pending bill count of the two major Missouri contractors had totaled only 21,636. This pattern continued through July and reached a peak of over 100,000 (3.4 weeks' work on hand) in August. Complaints from providers about delayed receipts of Reports of Eligibility (ROEs) and slow bill processing began to be received at the regional office. Complementary insurance payments to providers in the Kansas City area were affected by the St. Louis backlog.

[1]Memorandum dated September 18, 1981 from Kansas City Regional Office to HCFA, Division of Procurement in Baltimore.

Despite its fairly successful initial provider relations efforts, St. Louis' credibility with the provider community was severely tested once it began bill processing in the consolidated area. A prominent example of provider dissatisfaction is found in communications of the Kansas City Chapter of the Hospital Financial Management Association with St. Louis Blue Cross. In August 1981, HFMA polled its member hospitals to determine their experiences with the new intermediary. HFMA found serious problems centered around the report of eligibility. At that time, HFMA hospitals were reporting backlogs of ROE's at roughly 4½ times normal volume. To offset some of this unrest, the regional office allowed St. Louis to make accelerated payments to some providers whose cash flow situation was threatened by the slow bill processing.

Systems Problems

Soon after it began bill processing on the MDCC system, St. Louis experienced problems with the conversion programs which had been used to build historical claims payment data into the new system to allow for processing pending bills for St. Louis and Kansas City providers. This deficiency had its greatest effect on home health bills, and was resolved by the second week in July. However, by this time, St. Louis had identified over 100 other systems problems which required correction. Our discussions with regional office personnel indicated that St. Louis was slow in prioritizing, controlling and tracking the resolution of these systems problems. Regional office personnel have told us that they had to emphasize the importance of these tasks to St. Louis through frequent on-site consultation. St. Louis officials have remarked to us they did not have sufficient time during the transition to document the new system and thoroughly train personnel in its

procedures. They and the regional office have both remarked that the ISTP is insufficient for total systems testing. Although St. Louis assumed complete control of the system from MDCC on August 15, they reported that many problems still had not been resolved and that they were making almost daily changes to the system up to six months after implementation.

Data Entry

During its initial two months of full operations, St. Louis had to hire additional staff and use some outside data entry services to gain control over its rising claims backlog. By the end of July, pending bills had grown to over 98,000. Outpatient bills composed 68 percent of this pending and over 50,000 had never been entered into the system. Additionally, more than 8,000 NOAs and SOCs had yet to be entered into the system. A normally functioning system would have only about 20,000 pending bills and only a few thousand NOAs and SOCs pending. St. Louis officials determined that even with overtime (which they had been using since June 7), they would not be able to bring the backlog under control. As a result, 4 permanent and 12 temporary data entry clerks were hired in early August. By late August, with the pending still not declining, St. Louis contracted with an outside data entry agency to key outpatient bills. With this additional assistance, the total bills awaiting entry was reduced to 40,000 and unentered NOAs and SOCs declined to 2,000 by September 15.

PMTT Query/Reply System

The introduction of new hardware at the Health Care Financing Administration data center caused some unforeseen problems for St. Louis during the July and August start up period. During July, a number of problems

developed with the programmable Magnetic Tape Transmission (PMTT) system operation, which resulted in delayed replies from Baltimore and therefore delayed ROEs and bill payments. HCFA/Baltimore had "down-time" problems during two daily periods reserved for St. Louis. Another problem which resulted from these difficulties in Baltimore was that the final part of HCFA's transmission to St. Louis would be lost when the next user logged the HCFA system. On a few occasions, HCFA attempted to retransmit some data already sent to St. Louis.

The regional office worked with HCFA/Baltimore and St. Louis to resolve these problems. They arranged for some tapes to be exchanged by air express, and, by late July, secured extra transmission time for St. Louis from Baltimore. The RO also arranged for special training of St. Louis' PMTT operator by an experienced operator at General American Life, the Part B carrier in St. Louis. All of these efforts were successful in resolving the query/reply problem at St. Louis Blue Cross by August.

Workload Planning and Reporting

By September 1981, St. Louis had basically solved its claims backlog problem. It still, however, had not completely implemented the internal workload reporting system it described in its proposal. The RO stated this failure was "mostly due to the fact that St. Louis personnel have not actually determined the frequency and types of management reports the MDCC system can produce" and pointed out, as an example, that St. Louis' internal reports made it difficult to determine the actual count of pending claims.

In August, the RO had requested a plan of action from St. Louis for bringing the bill and NOA/SOC backlogs into line, including the expected date that pending would be reduced to normal and interim weekly targets toward

meeting this goal. The RO began receiving this weekly report in August and used it to suggest areas needing attention by St. Louis management. These reports assisted St. Louis in analyzing its status and in implementing adjustments in staffing and workload processing which eventually reduced inventories to acceptable levels.

We have seen that although St. Louis Blue Cross passed the formal HCFA systems and operational status tests during the transition, it experienced serious problems in workload processing once it went live on the new system in June 1981. These problems combined to result in large backlogs of unprocessed provider bills during the first few months after implementation.

Cost Performance in Missouri

Table 1.12 contains a summary of HCFA payments to and costs reported by St. Louis Blue Cross through fiscal 1983, the last year for which cost data are available. Included under HCFA payments are additional funds for contract modifications over this period. The figures indicate that St. Louis Blue Cross has sustained an accounting loss of over $1.5 million on the contract to date. If we assume that claims volume will increase and unit cost decrease in 1984 at the some rates experienced between 1982 and 1983, about 3.5 percent in both cases, we can project an additional loss of $1,923,537 in 1984 (reported costs of $4,124,041/HCFA payments of $2,200,524) for a total loss during the first term of the contract of over $3.5 million, about 25 percent of the total bid price.

Whether the projected $3.5 million is a true loss remains a matter of speculation within the industry. Under fixed price competitions, contractors have the option of submitting either low bids which reflect marginal cost or higher bids which reflect fully allocated joint costs. From this viewpoint, the discrepancy between Missouri's reported costs and its fixed payments from

Table 1.12: Cost Performance in Missouri

	Bills Processed	Firm Fixed Price[a] (HCFA Payments)	Fixed Price Per Claim	Reported Costs	Reported Costs Per Claim	Cumulative Surplus (Loss)
Implementation and Cost Report Settlement (Nov. 1980 to June 30, '81)	---	$1,241,199	---	$1,145,430	---	$ 95,769
B. Operations						
FY 1981	304,616	2,490,255	$8.17	1,355,156	$4.45	1,135,099
FY 1982	1,233,633	3,646,256	2.96	5,527,241	4.48	(745,886)
FY 1983	1,277,138	4,553,743	3.57	5,520,543	4.32	(1,712,686)
Subtotal-Operations	2,815,387	$10,690,254	$3.80	$12,402,940	$4.40	($1,712,686)
Total	2,815,387	$11,931,453	$4.24	$13,548,370	$4.81	($1,616,917)

[a]Includes payments for incentives and contract modifications in years when they were incurred not necessarily when they were paid to BC St. Louis.

HCFA is not necessarily a "loss" nor a breach of good business practice. The discrepancy may reflect a marginally profitable situation wherein the intermediary has covered all its marginal direct costs and earned some revenues which contributed to fixed overhead.

First Year Renewal Option

In May, 1984 HCFA exercised the renewal option and extended its contract with St. Louis Blue Cross for one year to June 30, 1985 (cost report settlement activities extend to November 30, 1985). The fixed price agreed to for the option year was $6,185,530, which appears rather generous when compared to both the original fixed price bid by St. Louis and to recent trends in administrative costs among traditional contractors (see Table 1.13).

According to the schedule of prices in the original contract, St. Louis was to be paid a total of $12,136,138 for the three year period when it was performing all intermediary functions (July, 1981 to June, 1984). This amount equates to an average annual price of $4,045,389 for all contractor activities. The difference between this annual average and the first year extension price is $2,140,141, an increase of 53 percent. Moreover, the option year price includes anticipated savings from abatement activities such as decreased medical review and reduced EOMB mailings which had been previously agreed to in the original amended contract. The price does not, however, include costs for such potentially expensive items as the Uniform Bill (UB 82) and Prospective Payment System implementations. St. Louis had already received additional payments of over $700,000 for both of these projects during the term of the original contract.

Nationally, administrative costs among all cost reimbursed intermediaries increased by only 11 percent between 1980 and 1983, the last year for

Table 1.13: Summary Table of Missouri Costs to Date

	FY 1981	FY 1982	FY 1983	FY 1984 (to June 30)	Option Year (July '84 to June '85)
Contract Payments	$3,723,597[a]	$3,723,597	$4,413,152	$1,517,021	$6,185,530[b]
Modifications[b]	7,857	(77,341)	(140,591)	683,483	---
Liquidated Damages	0	0	0	---	---
Total Payments	$3,731,454	$3,646,256	$4,553,743	$2,200,050	---
Claims Processed	304,616	1,233,633	1,277,138	991,633[c]	1,501,342[d]
Total Cost Per Claim	$12.25	$2.96	$3.57	$1.53	4.12
National Average Cost Per Claim	$ 5.49	$5.26	$5.58	NA	NA

[a]Includes implementation price of $413,733 cost report settlement price of $827,466 (February to July 1981) and firm fixed price of $2,482,398.

[b]Figures cited are listed under period incurred which is not always when payments were made.

[c]Projection by Abt Associates for nine (9) months assuming growth rate of previous year.

[d]HCFA projection.

which cost data are available. Even if 1984 cost data were available and included in the computations, it is doubtful that the increase nationally would even begin to approach the 53 percent increase which St. Louis realized over this period.

Looking at the issue from the perspective of unit cost per claim it is easy to understand HCFA's view that the option year price was favorable.[1] Using HCFA's internal estimate of claims volume for the option year of 1,501,342, the unit cost per claim would be $4.12. This figure, although higher than their estimate for the full term of the original contract ($3.92), appears quite low when compared to the 1983 unit cost of traditional contractors. In fact, the $4.12 unit cost would have placed St. Louis as the 10th lowest cost intermediary in the country in terms of 1983 unit costs.

The option year extension price granted St. Louis seems to demonstrate an apparent weakness of fixed price contracts; namely, their failure to relate extension year prices to original bid prices. If HCFA desires to retain at least some of the benefits of these procurements without engaging in recompetitions every few years, it would seem reasonable to include language in the original contracts which tie-in option year prices to the original prices. Any number of methods could be used to relate these prices such as an index of input prices or national cost trends among all contractors. Almost any reasonable formula would be an improvement on the open-ended negotiation process which currently exists.

Table 1.13 contains a summary of HCFA's cost commitments to date in the Missouri experiment. In Chapter 2, we present a more detailed analysis of the performance of St. Louis Blue Cross as a fixed price contractor.

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[1]HCFA, internal memorandum "Missouri Part A Fixed price Contract Extension (BPO-P13)," undated.

1.2 The Fixed Price Contract in New York

In this section we review the origins and schedule of the New York Part A fixed price contract. Table 1.14 summarizes important milestones. We consider first the factors which brought about the contract in New York and the extent to which the New York contractors are representative of other intermediaries. We also compare the terms of this negotiated contract with other fixed price contracts awarded under competitive conditions. To address these issues we begin with a review of the history and performance of the incumbent carriers.

Origins of the New York Experiment

The unique feature which distinguishes the New York experiment from all other fixed price experiments to date is that it did not involve a formal competition. The experiment arose from a proposal which was presented to senior HCFA officials in 1979 by senior executives of the Blue Cross Association (BCA) and the affiliated Blue Cross plans which were its subcontractors for Medicare Part A intermediary services in New York state. The Blues' proposal called for a consolidation of the functions performed by the seven New York subcontractors under the aegis of a traditional nonprofit cost reimbursed contract. All claims processing activity would be consolidated at a single facility in New York which would be operated by Blue Cross Blue Shield of Greater New York (BCBSGNY). The various plans would each be responsible in their own territories for traditional provider relations and beneficiary services. Each plan would continue to perform Medicare audit and settlement functions.

Table 1.14: Milestones in the New York Fixed Price Experiment

Milestones	Date
Letter of Agreement	May 6, 1980
Original Implementation Plan	June 4, 1980
Revised Implementation Plan	June 26, 1980
Workload Phase-Ins	
Syracuse	November 1, 1980
Albany	December 1, 1980
Buffalo	January 1, 1981
Rochester	February 1, 1981
Utica and Watertown	March 1, 1981
New York City	April 1, 1981
Formal Contract	April 30, 1981
Original Operational Period	May 1981 to April 1984
Extended Contract Period	May 1984 to September 1987

In response to this initiative, HCFA asked for a fixed price contract with provisions for liquidated damages in case of poor performance. After some further negotiations, the various parties agreed to undertake a fixed price contract with the condition that the transition costs of phasing out the incumbents and starting the new central operation would be incurred under the outgoing cost-reimbursed contracts. In addition, there were provisions for both liquidated damages and incentive payments corresponding respectively to very poor or exceptionally good performance. A letter of agreement on these essential points was signed by BCA, the affiliated plans, and HCFA on May 6, 1980. A full contract was signed on April 30, 1981.

The primary motivation for the consolidation was the commonly shared perception that New York state had too many intermediaries. Advances in claims processing methods were making the seven separate New York contractors increasingly obsolete. This was particularly true for BCBSGNY which was additionally facing the economic difficulties of conducting a large clerical operation in New York City.

In discussions with Abt Associates, the various parties have placed different emphasis on their motives for seeking the New York consolidation. Officials at BCBSGNY have tended to emphasize the opportunities for cost reduction and better service which the consolidation would make possible. Officials at BCA have emphasized the economic problems which would have plagued the contractors if they had tried to continue their operations without change.

Officials at HCFA have emphasized that the Blues' initiative for a voluntary consolidation may have been prompted by the fear that HCFA would choose New York as a site for a fixed price Part A competition. The possibility that HCFA might do this was recognized by the New York intermediaries as

being very likely since HCFA had already effected a consolidation of the upstate New York Part B carriers via a fixed price competition. In HCFA's view, the New York proposal was intended to preempt a competitive procurement which might have resulted in either unfavorable terms for the Blues, or worse yet, the loss of their Part A contract to an outside bidder.

Whatever these shades of emphasis over the motivation of the New York proposal, it is clear that all parties saw technical and economic advantages in the consolidation. This raises the issue of whether the Medicare program would have been better served by rejecting the New York proposal and proceeding with an open competition to consolidate the state under a fixed price contract. An open competition would most likely have given the government more leverage in setting the terms of a contract and it would have allowed the government to freely choose a contractor from among the bidders in such a competition. A competition would also have opened the possibility that one or more bidders would offer the government a better price than that presented in the New York proposal.

The New York Part A experiment thus offers a test of the effectiveness of a negotiated contract compared to the full scale competitions which have characterized HCFA's other fixed price contracts. However, the test is a very rarefied one because the principal negotiators in this case were very senior officials rather than the management staff that customarily negotiates contract modifications and budgets. HCFA officials have suggested that the agency, on a routine basis, can achieve by vigorous negotiation a result which is as favorable to the government as could be achieved by formal competition.[1] One senior BCA official pointed out that HCFA has the power to audit

[1]Berry, John C., HCFA memorandum BPO-P13, "Comments on Abt Associates Draft Final Report on the Health Care Financing Administration's (HCFA) Part B Fixed Price Experiments in Maine, Upstate New York, and Illinois," August 17, 1983.

Medicare contractors and conduct special cost studies. This audit power, when used effectively, gives HCFA the ability to challenge a contractor's cost assumptions and to disallow any costs which it finds to be unrelated to the program.

In this instance of high level negotiations, the terms of the New York contract appear to be somewhat more favorable to the contractors than is the case in a competed contract. Table 1.15 compares the New York Part A contract with the fixed price contracts which HCFA awarded on a competitive basis in either the Part B or Part A portions of Medicare. The table compares these contracts in terms of three provisions. First is the ratio of cost per claim under fixed price to cost per claim under the last year of the previous contract. This ratio is less than one for each of the experiments thus indicating that each fixed price contract achieved a reduction in cost over

Table 1.15: Medicare Contract Terms for Fixed Price Contracts

	Cost Per Claim Ratio[a]	Liquidated Damages Ratio[b]	Incentive Payment Ratio[c]
Part B Competitions			
Maine I	.88	.29	None
Maine II	.78	.26	.13
Illinois I	.57	.19	None
Illinois II	.44	.25	.17
New York	.45	.26	None
Part A Competitions			
New York	.81	.04	.02
Missouri	.86	.10	None

[a]Cost per claim as bid in fixed price competitions/Cost per claim in last of previous contract.

[b]Total potential liquidated damage payments/Fixed price.

[c]Total potential incentive payments/Fixed price.

previous levels. The cost per claim ratio for the New York Part A experiment (.81) is lower than the ratios for the competed Part A contract in Missouri (.86); and the Maine I Part B experiment (.88), but not as low as the ratios achieved by the initial competitions in upstate New York (.45) and Illinois (.45) and the recompetitions of Maine II (.78) and Illinois II (.45). The ratio for the New York Part A experiment thus falls in the higher end of the range of the various competitions. We should also note that the relatively high price in New York occurs in a situation where the contractor's risks were being minimized by the fact that many of the expenses of the consolidation were being met under a cost reimbursed situation.

A second measure of the terms of a contract is the ratio of potential liquidated damages to the total fixed price. This ratio measures the potential financial risk which the contractor bears for poor performance. As shown in Table 1.15, liquidated damages ratio was lower in the negotiated New York Part A contract than in any of the competed experiments. This indicates that the New York contractors were more successful in negotiating favorable terms on this particular item than were contractors in the other experiments who basically had to abide by the liquidated damages schedule set forth in a competitive procurement.

A third measure of terms is presence of incentive payments and, where present, the ratio of total potential incentive payments to the fixed price. HCFA so far has allowed incentive payments only in the Maine II, Illinois II, and New York Part A experiments. In these cases, the incentive payments are set at half the level of liquidated damages. The ability of New York to negotiate incentive payments is another indicator that negotiation allows a contractor to obtain terms which are somewhat more favorable than those dictated by a competitive procurement.

These rather narrow measures of contract terms, however, should be balanced against a larger issue, namely the risk of program disruption and inconvenience to beneficiaries that were incurred. The New York contract used two approaches to minimize the risks of changing contractors and consolidating a territory. First, the New York contractors were not in the position of having to deal with an outgoing incumbent. Instead, the duties of incumbents were being drastically realigned. This helped to assure a harmonious working arrangement and less disruption because all parties were, in a sense, winners. Second, the prime contractor did not have to bear the financial risk of unanticipated high costs during the period when it was implementing a new consolidated claims processing system. This risk was borne by the government under the outgoing cost contract. As a result, the contractor was under no financial pressure to skimp on implementation work in a way that would slow down or disrupt the bill processing work.

Historical Performance of Incumbents

In New York state, no less than seven Blue Cross plans served as intermediaries in the years immediately proceeding the fixed price experiment. The plans were located in Albany, Buffalo, New York City, Rochester, Syracuse, Utica, and Watertown.[1] They ranged in size from a high volume intermediary in New York City with almost two million bills processed per year to a low volume intermediary in Watertown which processed slightly over 28,000 bills per year. In total, the seven Blue Cross plans processed over three million Part A bills for 733 providers with benefit payments exceeding $2 billion in fiscal year 1980. Their combined administration cost

[1]Until fiscal year 1978, the Blue Cross plan in Jamestown, New York also served as a Part A intermediary.

for that year was about $16.5 million or less than one percent of benefit payments.

As might be expected from this diversity, the performance of these intermediaries varied considerably with each contractor having its own strengths and weaknesses. In terms of their total unit cost to process a bill, all of the contractors were below the national averages for the three years immediately proceeding the experiment. Table 1.16 displays the total unit costs per bill for the seven intermediaries and the New York and national averages for the three years proceeding the consolidation.

In terms of statewide performance, the average unit cost in New York declined in 1979 and increased in 1980 while the reverse was true nationally. Individually, Utica and Watertown had the lowest cost in 1978 and 1979 with Albany outperforming Watertown in 1980. It is interesting to note that New York City had the second highest unit cost after Buffalo in all three years.

Another measure of performance can be found in productivity per person year. HCFA defines productivity per person year as the quotient of total annual bills processed divided by total person-years worked. Table 1.16 compares productivity per person year achieved by the New York contractors with the national average for the three years before the consolidation. The table reveals that Albany was the best performer in two of the three years while most of the other intermediaries clustered around the national average. The Watertown plan was significantly below the national averages in each of the years studied. Comparisons of the average for New York intermediaries with the rest of the nation indicates no significant difference.

Table 1.16: Performance Indicators of New York Blue Cross Intermediaries in Years Preceding Experiment

Contractor	1978	1979	1980
		Total Unit Cost for Claim	
Albany	$5.05	$4.32	$4.16
Buffalo	5.15	5.15	5.35
New York City	5.13	4.92	4.99
Rochester	5.30	4.38	4.68
Syracuse	5.05	4.52	4.51
Utica	3.89	4.38	4.13
Watertown	4.02	4.27	4.74
New York Average	4.96	4.77	4.82
National Average	5.49	5.53	5.40
		Productivity per Person Year	
Albany	5,685	7,197	9,150
Buffalo	5,033	5,802	5,558
New York City	5,360	6,017	6,464
Rochester	6,251	6,183	6,454
Syracuse	4,119	5,470	6,174
Utica	5,239	5,237	6,516
Watertown	3,732	4,059	4,089
New York Average	5,248	5,971	6,481
National Average	5,056	5,540	6,478
	Total Error Rates (Inpatient Hospital Bills)		
Albany	2.608	2.569	1.833
Buffalo	1.104	3.167	1.222
New York City	3.334	4.300	4.236
Rochester	3.217	2.832	3.212
Syracuse	2.065	2.320	1.906
Utica	1.146	1.000	1.222
Watertown	2.406	2.402	2.146
New York Average	2.784	3.480	3.164
National Average	2.381	2.120	2.127
	Mean Intermediary Processing Times (Inpatient Hospital Bills)		
Albany	8.966	4.532	5.044
Buffalo	7.170	9.894	5.258
New York City	15.792	9.673	14.853
Rochester	8.712	6.740	11.042
Syracuse	11.079	9.146	3.641
Utica	17.472	16.424	10.556
Watertown	48.988	10.894	20.992
New York Average	14.009	9.387	11.363
National Average	8.640	8.381	7.831

(continued)

Table 1.16 (Continued)

	1978		1979		1980	
	One Year	Two Years	One Year	Two Years	One Year	Two Years
	Percent of Hospital Cost Reports Settled					
Albany	NA	NA	55.2	89.3	55.6	100
Buffalo	NA	NA	87.8	100	94.7	100
New York City	NA	NA	55.7	97.3	82.7	98.6
Rochester	NA	NA	88.2	100	100	94.1
Syracuse	NA	NA	90.0	100	85	100
Utica	NA	NA	76.7	100	93.1	100
Watertown	NA	NA	0.0	100	100	100
New York Average	NA	NA				
National Average	NA	NA	70.5	96.1	NA	NA

The accuracy with which bills are processed can be used as another measure of performance; HCFA defines two categories of bill errors. The first category, known as consistency errors, measures the percent of processed bills which contain discrepancies in the internal logic of individual items on a billing form. The second category, called utilization errors, are discrepancies in the eligibility and utilization data found on bills with the data found on the health insurance master records maintained by HCFA/Baltimore. Both categories of bill errors are available by type of provider. Table 1.16 compares the total inpatient hospital bill error rates of the seven New York intermediaries with the national averages for the three years before the experiment. The dollars associated with inpatient hospital bills constitute the largest dollar payments by Medicare intermediaries.

The figures show that in every year two intermediaries, New York City and Rochester, had error rates higher than the national average, while Utica had error rates below the national average each year. Buffalo and Syracuse were below the national averages in 1978 and 1980. Most of the other contractors exhibited a somewhat inconsistent performance over these years.

Timeliness of bill processing is another important indicator of contractor performance. Table 1.16 lists the average intermediary processing times (for inpatient hospital bills) for the seven New York plans and the statewide national averages from 1978 to 1980. These figures indicate that the seven plans generally had higher mean processing times than the national averages. Individually, Buffalo's performance was superior to the national averages in 1978 and 1980, and Albany's was superior in 1979 and 1980. New York City, Utica and Watertown had processing times exceeding the national average in all three years.

Table 1.16 also lists the percentage of hospital cost reports settled in 1979 and 1980 within one and two years of the due dates. The figures indicate that Syracuse, Rochester and Buffalo were the top performers in 1979 while Watertown and Buffalo were the superior performers in 1980. New York City's performance improved in both categories from 1979 to 1980.

It is apparent from these performance indicators that none of the seven New York plans can be shown to be clearly outstanding over the others. Most of the intermediaries were strong in some areas and weak in others much like the pattern exhibited by most intermediaries in the nation. This combination of strong and weak performance, combined with the large diversity in workloads, made the state ripe for some form of consolidation which could test the effectiveness of combining operations under a fixed price arrangement.

Transition/Implementation in New York

Overview

In this section we examine the process by which the major bill processing and provider reimbursement functions of the seven Blue Cross intermediaries in New York state were consolidated in late 1980 and early 1981. The process of contractor transition is usually a source of difficulty in Medicare and the degree of difficulty usually increases with the size of the territory being consolidated and the number of contractors involved in the transition. The New York Part A transition is a major exception to this rule. Unlike other large transitions which occurred in Part B of Medicare in Illinois and upstate New York, and the Part A transition in Missouri, the New York Part A implementation was virtually trouble-free both while it was under way and after operations began.

The major reason for the success of the New York experiment was that it was a voluntary process by which all seven plans and BCA agreed to propose the consolidation to HCFA as a means to reduce intermediary administrative costs in the state. Unlike all other fixed price experiments, the plans in New York were not placed in a position of open competition with each other. Moreover, because each plan would still perform certain Medicare functions (beneficiary services, provider relations, and provider audit) there were no real losers in the experiment and each plan had a legitimate interest in insuring the success of the consolidation.

The formal transition/implementation period began on May 6, 1980 with the signing of the Letter of Agreement by Blue Cross and Blue Shield of Greater New York (BCBSGNY), the Blue Cross Association (BCA), and HCFA. This Letter of Agreement and the subsequent formal contract were unique among fixed price contract experiments in three respects. First, the contract allowed BCBSGNY to subcontract certain activities to the local plans thereby maintaining a Medicare presence for each plan in its area in highly visible activities (provider relations and beneficiary services). Up to this time all other fixed price procurements had only allowed data processing to be subcontracted, while the Missouri Part A procurement had additionally permitted the audit function to be subcontracted. Second, as a result of negotiations, the one-year transition period in New York was funded on a cost reimbursement basis (subject to a ceiling) rather than a fixed price basis as had occurred in all other experiments. Third, unlike the Missouri Part A experiment, the Blue Cross Association remained the prime contractor with HCFA in New York.

On June 4, 1980 BCBSGNY submitted its formal implementation plan for the transition period which could extend through April 30, 1981. The plan involved the consolidation of Blue Cross intermediary activities at a central

site to be located in Syracuse and provided detailed task descriptions of transition activities in the following areas:

- Facilities and Equipment
- Personnel and Staffing
- Administrative Coordination and Control
- Data Processing
- Beneficiary and Provider Services
- Provider Audit and Reimbursement

The implementation plan also included a Medicare budget for non-recurring and operations costs of the central site through April 30, 1981 and Gantt charts indicating commencement and completion dates for each of the hundreds of activities listed in the implementation plan.

The New York City regional office reviewed the New York implementation plan and on June 17 requested considerable expansion on such issues as: the rationale for selecting Syracuse as the central site; the configuration of beneficiary and provider telephone services; staffing in claims processing and data processing; systems conversion and testing activities, and maintenance of the Medicare bank accounts. These and other issues were addressed in an addendum to the implementation plan which BCBSGNY delivered to HCFA on June 26, 1980. Included in the addendum were revisions to the monthly activities of the implementation plan and PERT charts listing over 800 individual implementation tasks, their start and finish dates. In July 1980, a transition committee was established consisting of representatives of the seven New York plans and HCFA central and regional office staff. Subcommittees were formed and charged with problem resolution in the major functional areas such as claims and data processing, finance, and audit and reimbursement. It should be noted that the New York regional office had had prior experience involving

large consolidations when the up-state Part B carriers' functions were assumed by Blue Shield of Western New York (Buffalo) in 1979. They were, therefore, aware of the potential problems involved in contractor transitions and could draw on this experience to avoid similar complications in the Part A transition.

After several adjustments the final implementation plan involved a staggering phase-in of each contractor's bill workload according to the following schedule:

Syracuse	11/1/80
Albany	12/1/80
Buffalo	1/1/81
Rochester	2/1/81
Utica & Watertown	3/1/81
New York City	4/1/81

Under the agreed phase-in procedures, all claims with dates of service on or after the phase-in date for each plan were sent to the central site for processing (providers were advised of this procedure). A 90-day wind-down period was agreed upon in which each plan would process its claims and other pending work and, on the 90th day at the latest, all remaining work at the plan would be shipped to the central site for resolution. At the same time an alternate methodology was developed to allow for an early phase-out procedure for each plan. This methodology called for a review of bill receipts at each plan (based on date of service) after the first 35 days of the phase-in date and, if the volume of receipts for any period of five consecutive work days did not exceed 20 percent of a normal weekly bill volume (based on prior year's receipts), the wind-down period was terminated within 10 calendar days and all remaining work was transferred to the central site.

Major Transition Tasks

Site Selection

Consolidation of all New York Part A claims processing at a single site was one of the major efficiencies which was to be achieved by the new fixed price contract.

In December 1979 BCBSGNY contracted with a real estate consulting firm to assist them in the selection process for the central site. The criteria for the site selection study included the following:

- site must be in New York State and accessible to New York City and the other plan locations;
- site should offer adequate local labor supply with the clerical and technical skills required;
- site should have low occupancy and utility costs;
- support services such as equipment repair, office cleaning, and machine maintenance should be available; and
- public transportation should be available for workers employed at the central site.

After studying eleven geographic regions in the state, the consultants concluded that two sites, Syracuse and the mid-Hudson region (Poughkeepsie/-Kingston/Newburg), best met BCBSGNY's criteria. Syracuse was eventually chosen because of its low utility costs, and its mid-state location which offered better access to the other plans than the mid-Hudson region. A fairly modern building with over 50,000 square feet of space was leased to house the central site operations. It was located within walking distance of downtown Syracuse and had been previously unoccupied. Computer facilities were located in the basement, administrative and audit reimbursement staff on the first floor and bill processing personnel occupied the second floor of the building.

Staff for the new operation were hired gradually to match the workload. For example, by November 1980, the date when the Syracuse plan was to be phased in, BCBSGNY's hiring schedule was to have a total of 113 clerical, supervisory, and management positions staffed in claims processing. Most of the clerical claims processing staff were inexperienced in Medicare although BCBSGNY found the quality of clerical help to be quite high in the Syracuse area. Virtually all of the 30 clerical employees in the Syracuse plan's Medicare operation transferred to the central site after that plan ceased its Medicare operations. Central site management indicated that they had no problem recruiting well qualified clerical help in the Syracuse area.

Staffing for the data processing positions necessary for the implementation was initially provided by BCBSGNY employees and by a few EDP personnel from the Buffalo plan (both New York City and Buffalo used the Model A system which was to be installed at the central site). As these implementation tasks were completed, newly hired EDP employees were expected to assume responsibility for ongoing maintenance and development activities. The implementation plan called for the recruitment of 30 permanent central site EDP employees by March 1, 1991.

Provider Relations

In most other Medicare consolidations that we have evaluated, we have witnessed a certain amount of unrest and concern in the provider community about a change in contractors. This is particularly true in those cases involving the nonvoluntary termination of a contractor where ill will or misunderstanding may cause outgoing contractors to make unfavorable remarks about the incoming contractor. There is no evidence of any such negative occurrences in the New York Part A consolidation. The consolidation in New

York occurred in a cooperative atmosphere because it was a voluntary agreement where all of the seven plans would still remain the chief representatives of Part A program for their local areas.

All New York providers serviced by the seven Blue Cross plans were notified by their respective plan during May 1980 of the impending consolidation of intermediary responsibilities. In these notices, they were reassured that provider relations and audit and cost report settlement activities would continue to be performed by their local plan under subcontract to BCBSGNY. Thus, the providers would continue to deal with the same provider relations representatives and financial and audit personnel as in the past.

In addition to the individual notices sent to each provider, BCBSGNY and the other six Blue Cross plans scheduled a total of 28 provider workshops throughout the state to advise provider personnel on bill processing and audit procedures. These workshops were arranged to coincide with the central site phase-in of the seven plans' bill processing workloads. Five workshops each were held in the Syracuse, Buffalo, Rochester, Albany, and Utica/Watertown areas. Eight provider workshops were conducted in the metropolitan New York City area. This combination of early and frequent updates on the consolidation to the provider community along with the workshops held throughout the state seems to have been successful in allaying any fears among the providers about the change in intermediaries. Providers were well informed about the consolidation and about the timetable to begin sending claims to the central site.

Provider Audit and Cost Report Settlement

Unlike the Missouri transition, there was no formal cut-over date for the provider audit and cost report settlement activities to be assumed by

BCBSGNY. Since the local plans would continue to perform these activities under the overall direction of BCBSGNY, the transition process involved only negotiating sessions between BCBSGNY and the local plans (timed to each plan's phase-in date) before subcontracts were signed and approved by HCFA. Thus, the transition process for these activities was virtually invisible to the provider community. They would continue to deal with the same local plan audit and settlement staff as in the past. As could be anticipated from such a transparent process, no disruptions or problems of any note developed during the transition period for these activities.

Systems Implementation

One of the major factors which contributed to the smooth consolidation of intermediary activities in New York was the fact that BCBSGNY decided to install the Model A system at the central site rather than developing or purchasing a new system. In most other consolidations, particularly the one in Missouri, major problems have developed when contractors have introduced new claims processing systems during the transitions. BCBSGNY decided to install the Model A system at the central site because it was a proven system which was already in use in both Buffalo and New York City which together accounted for about 70 percent of the bill workload in the state.

Since both New York City and Buffalo were processing on the Model A system, all the major files, including the claims history for both plans, were loaded into the central site system. For the five other non-Model A system plans, BCBSGNY used a variety of techniques to convert files to Model A format and load into the central site system. For example, to construct a statewide automated provider file, they used hard-copy output from the five non-Model A plans to load provider identification and reimbursement data into the central

site system. To construct claims history for these plans they used the automated PATBILL files which they reformatted to conform to Model A system specifications and loaded into the central site system. Up to one year of claims history for each of these five plans was converted and included in the central site history file.

In order to accommodate the high volume of transactions for the consolidated operation, BCBSGNY introduced a number of enhancements to the Model A system. These included greater utilization of direct access storage devices, improved file access methods, reductions in sequential processing, elimination of redundant functions, improved job scheduling and control, and the use of multi-programming techniques.

By late September 1980, all computer hardware required to operate the system was installed at the central site. This hardware included an IBM 3036-6 central processing unit, disk drives, tape drives, high speed printers, and other equipment for input of admission and start of care notices, Part A bills, and other data.

Systems Testing

BCBSGNY utilized a dual approach to systems testing at the central site. Before any plan was assumed by the central site, a tape created from test data (dummy bills) was produced in PATBILL format and submitted to Baltimore. Baltimore in turn audited the tape using its routine PATBILL editing programs and notified BCBSGNY of the test tape's acceptability. As each of the seven plans was integrated into the central site, this process was repeated using test data to create the tapes. These test tapes served to assure HCFA and the central site staff that processed bill history would be captured by Baltimore in an acceptable format.

The other method of systems testing included using real beneficiary HICs on test NOAs and SOCs and corresponding bills in a simulated mode to test the initial central site edit programs, the query/reply process with Baltimore, and the process by which bills match up woth open items created by the NOAs and SOCs. This simulated testing served to validate the internal operational integrity of the central site bill processing system and its telecommunications link with Baltimore through the query/reply process. Unlike other consolidations, no comparison testing of processed bills from the outgoing plans in the central site processing system was performed.

Toll-Free Telephone Service

Beneficiaries in the state were instructed to direct inquiries regarding claims status and other Medicare issues to the central site via toll-free telephone lines. A special beneficiary telephone service unit was established at the central site with four (4) incoming WATS lines to provide toll-free service to beneficiaries. The unit was staffed with 13 trained interviewers and a supervisor. Special tie-lines were available between this unit and each local plan to assist them in handling walk-in and telephone inquiries by beneficiaries involving claim status were researched and responded to by the central site staff.

Providers were instructed to direct all Medicare inquiries to the provider relations representatives at the local plan via toll-free lines in Syracuse. These representatives had access to a central site provider relations coordination unit via tie-lines. The central site unit performed the necessary research and reported back to the local plan representative with the appropriate response or problem resolution. In this manner, local plan

identity and participation with the provider community was maintained throughout the transition.

BCBSGNY[1]

Performance During and After Transition

As with most contractor consolidations, the New York Part A central site experienced some problems with bill backlogs after the transition period when the central site was completely operational on May 1, 1981. Table 1.17 indicates the total pending bill workload and the bills pending over 30 days in terms of day's work on hand for the New York Part A central site and for St. Louis Blue Cross during the operational months of each plan's fixed price contract in 1981. The table also includes the national averages for these two performance indicators during this period. The table indicates that in terms of the total pending bill workload, New York Part A exceeded the national average by about one day each during the first two months of its operational period. By the third month, it was below the national average and remained at or below the national average for the remainder of 1981. In contrast, St. Louis Blue Cross exceeded the national average by 21 and 14 days, respectively during its first two months of operations and did not begin to approach the national average until October--its fourth month of operations.

[1]Source: BCBSGNY Final Administrative Cost Proposals (FACPs) for the period 5/1/80 to 9/30/80 and 10/1/80 to 4/30/81 dated 9/15/81.

Table 1.17: Workload Performance Indicators During 1981 Operational Periods for New York Part A and St. Louis Blue Cross

Month	Day's Work on Hand End of Month			Days' Work on Hand Over 30 Days--End of Month		
	N.Y.	St. Louis	National Average	N.Y.	St. Louis	National Average
May 1981	7.4	--	6.4	3.0	--	1.3
June 1981	7.2	--	6.5	2.9	--	1.1
July 1981	6.0	28.4	6.5	1.3	6.7	1.2
August 1981	4.5	20.3	6.2	1.2	7.4	1.1
September 1981	4.9	8.8	5.4	1.1	3.0	0.9
October 1981	5.1	5.3	5.1	1.1	1.8	0.8
November 1981	4.0	6.1	5.4	1.2	1.2	0.8
December 1981	3.4	4.2	5.4	1.3	0.5	0.8

Source: HCFA Bureau of Program Operations, Part A Intermediary Workload Report, May through December 1981.

In terms of the pending over 30 days, the figures are fairly similar. New York exceeded the national average by 1.7 and 1.8 days, respectively during its first two months of operations and then began to approach the national average during the remainder of the year. St. Louis Blue Cross exceeded the national average by 5.5, 6.3, and 2.1 days, respectively in its first three months of operations and then began reducing its pending to acceptable levels in the next few months.

The figures in Table 1.17 indicate that while temporary workload dislocations are the norm in contractor consolidations, the disruption at St. Louis Blue Cross was more severe and lasted longer than at the New York Part A central site. This conclusion is not surprising considering the many systems

problems which St. Louis Blue Cross experienced after the implementation as opposed to New York Part A's comparatively trouble-free implementation.

Conclusion

We have seen that despite the considerable amount of resources required to consolidate the major functions of seven intermediaries, the New York Part A transition and implementation effort was virtually trouble-free. BCBSGNY officials maintain that they met every one of the over 800 target dates listed in their implementation plan for the transition period. We have found no evidence to dispute their claim for any of the major targets.

A number of factors converged to make the New York Part A transition/ implementation process a sucess. The foremost factor, and one which is unique to New York Part A among all the fixed price experiments to date, was that it was a voluntary process agreed to by all the Blue Cross intermediaries in the state. To date, all other fixed price experiments with the exception of Maine I had involved the non-voluntary termination of one or more contractors from the Medicare program. In most of these transitions the attitudes of many of these outgoing contractors could be described as less than totally cooperative. Because the consolidation in New York was agreed to by all the plans prior to approaching HCFA, this negative reaction did not occur in the New York transition.

Another factor which contributed to the smoothness of the New York transition was that each plan had a stake in the success of the consolidation. Because each plan would still perform the most visible intermediary functions in its territory (beneficiary services, provider relations, and audit) it would be the first to be contacted by the local beneficiaries and providers if the transition and subsequent operations developed problems.

Even though each plan was in reality a third-tier contractor in the Medicare program, it was still considered the representative of the Medicare program in its community. Thus, the local plans, by participating in the provider seminars with BCBSGNY and by maintining their beneficiary and provider services functions, offered a continuity to the transition and the consolidation which was absent in all other fixed price experiments.

A third and difficult-to-measure factor contributing to the success of the New York Part A transition was the prior experience of the New York regional office in monitoring the upstate Part B consolidation in 1979. The Part B transition in New York was a complex process made more difficult by a very negative attitude from one ongoing carrier and the fact that the incoming contractor (an incumbent carrier) was changing to a new data processing system in a different city. Despite these complexities, the New York Part B transition progressed moderately smoothly although performance during the initial few months of operations was less than satisfactory. The New York regional office staff was therefore in a position to apply the lessons it had learned through the Part B consolidation to Part A and to anticipate and/or avoid similar problems in the Part A experiment. In addition, the New York intermediaries were sufficiently experienced at upgrading systems that they were able to develop a comprehensive plan for the consolidation.

Cost Performance of the New York Experiment

Table 1.18 provides a summary of the cost performance in New York to date. In terms of the cost of the contract to the government as of the end of fiscal year 1983 HCFA had reimbursed the contractor a total of $44,415,522 for all reasons (i.e., original implementation and fixed price plus incentive

Table 1.18: Cost Performance in New York to Date

Fiscal Year	Bills Processed	Firm Fixed Price[a] (HCFA Payments)	Fixed Price Per Claim	Reported Costs	Reported Costs Per Claim	Cumulative Surplus (Loss)
Implementation (May 1980 to May 1981)	480,359	$ 4,776,500	$9.94	$5,495,890	$11.44	($719,390)
Operations						
1981	1,585,265	$ 6,229,529	$3.93	$6,523,424	$ 4.11	($1,013,285)
1982	3,912,498	16,249,412	4.15	15,866,355	4.06	(630,228)
1983	4,333,831	17,160,081	3.96	16,573,980	3.82	(44,127)
TOTAL	10,311,953	$44,415,522	$4.31	$44,459,649	$4.31	$ (44,127)

[a]Includes payments for incentives and contract modifications in years when they were incurred not necessarily when they were paid to BCBSGNY. Control modifications reflect dollars actually spent rather than the value of the modification as initially awarded. BCBGSGNY's total fixed price payments based on the initial value of modifications would be $44,506,566; that is, some modification work had actual costs lower than initial estimates.

payments and costs for contract modifications). This figure equates to a total average unit cost per bill processed of $4.07.

Over this same period, BCBSGNY reported total costs of $44,459,649 for a unit cost of $4.31 per bill. Reported costs thus exceeded the fixed price by $44,127.[1]

New York Contract Renewal

In May 1984 the parties agreed to extend the fixed price contract for 41 months to September 30, 1987. The renewal period is somewhat suprising in light of language in the original contract which provided for a single two-year extension. The total fixed price for the extension is $75,016,000 or a unit cost of $3.76 based on an estimated workload of 19,951,000 claims. This fixed price is 14¢ less per claim that the price agreed to in the original contract. As part of the new contract, BCBSGNY also agreed not to request any further modifications for work required by the Omnibus Reconciliation Act. The new fixed price does not include additional potential payments by HCFA for superior performance or contract modifications nor does it include potential liquidated damage liability of BCBSGNY.

In relation to performance up to the end of fiscal 1983, the estimated unit cost of the renewal appears favorable to BCBSGNY. Again, referring to figures in Table 1.18, New York's unit cost at the end of fiscal 1983 was $3.82. If they continue the declining cost trends exhibited over the first

[1]It should be noted that these figures are based on payments actually received by the contractor for modifications. When contract modifications were initially awarded they were based on estimated cost, while final payments were based on actual cost. BSBCGNY was generally able to perform modification work for less than initial estimates. If BCBSGNY had been paid the full value of these estimates, it would have received $44,506,566.

three years of the contract, their unit cost should remain below $3.76 in 1984 and the remaining years of the extension.

From HCFA's viewpoint, the fixed price for the extension also appears to be favorable since it is below the previous fixed price (on a cost per claim basis) and it is likely to be below the national average, given recent trends.

In the following chapter we conduct a more detailed analysis of the cost of the New York contract relative to other intermediaries.

In summary, the Missouri fixed price experiment was conducted as an open competition with a mandated consolidation while the New York experiment involved a negotiated contract with a voluntary consolidation of incumbent contractors. Incumbents in both experiments were generally good contractors with some flaws in particular aspects of their performance.

The Missouri fixed price contract began with some initial difficulties in bill processing but these problems were resolved without major disruption to the Medicare program. The New York fixed price contract had virtually no implementation problems; subsequent performance merited incentive payments.

In the next chapter we examine the performance of the fixed price contractors using econometric methods. Our approach there is to determine if the costs and benefit payments of the fixed price contractors were better or worse than might have been expected from a continuation of the previous cost reimbursed contracts.

2.0 INTERMEDIARY EFFICIENCY AND EFFECTIVENESS UNDER FIXED PRICE

2.1 Introduction

This chapter analyzes the cost and technical performance of Medicare Part A intermediaries and the role which fixed price contracts have played in changing the efficiency and effectiveness of their operations. We find in this chapter that costs to the government were significantly lowered in the Missouri fixed price competition. Prior to the start of fixed price contracting, the two incumbent contractors in Missouri had begun to achieve costs below the national average. Under the fixed price competition, St. Louis Blue Cross submitted a bid which was significantly lower than would have been predicted by previous cost trends in the state. Statistical estimates of the savings in Missouri range from $1.36 to $1.80 per bill for a total savings of $3.8 to $5.1 million for the period from 1981 to 1983. No savings to the government, however, are found in the negotiated New York contract relative to the level of cost that would have been expected in the absence of the fixed price contract. The average cost of contractors in New York prior to the fixed price contract was below the national average cost. Under the negotiated fixed price experiment, New York's price per claim remained below the national average but within the range that would have been predicted by previous performance. The New York contract essentially provided a useful vehicle for consolidating seven contractors so that the state's aggregate cost performance would remain below the national average.

We also find in this chapter that Medicare benefit payment levels were not affected either positively or negatively by the fixed price experiments.

Finally, we explore several issues related to the cost and efficiency of Medicare intermediary operations. We find that evidence for economies of scale is less conclusive in the Part A program than it is in Part B. This

finding, by itself, suggests that the Part A program would not benefit as much in terms of reduced administrative cost from a consolidation of contractors as would the Part B program. We have found, however, that significant economies do occur when bills are submitted to the intermediary in machine readable form. An increase in the electronic submission and payment of bills would have a significant impact on reducing Part A administrative costs. These two findings leave us with a puzzle: is it possible to reap the full benefit of lower costs due to electronic claims submission without consolidating intermediaries into larger units? The available evidence shows that consolidated intermediaries do achieve lower costs than their separate and smaller predecessors. However, organizational and performance factors are more successful at explaining the result than is the simple increase in bill volume.

We have also found that the mix of bills processed by an intermediary has a significant impact on its administrative costs. There may be significant economies from consolidating the processing of certain types of bills (e.g., Home Health) with a single contractor. However, further analysis of this issue will be required to determine how this type of consolidation should be designed.

In this chapter, we begin with a review of intermediary performance for the fiscal years 1976-1983. Contrasts and comparisons are drawn between this period and earlier years which have been analyzed by previous studies. Major attention in this review is given to topics that have been of concern to the Medicare program throughout its history. These topics include: (1) bill processing costs, (2) speed and accuracy of payment, (3) levels of benefit payments, (4) trends in input prices, (5) relative performance of Blue Shield versus commercial intermediaries, (6) extent of use of the Model A Computer System, (7) economies of scale. Each of these topics is discussed in turn.

Following this discussion, we use econometric methods to explore how fixed price contracts have affected carrier performance while taking into account the effects of these other factors.

2.2 Historical Performance of Part A Intermediaries

2.2.1 Bill Processing Costs

Before we present our analysis of the effects of fixed price contracts, it will be helpful to review the historical performance of Medicare Part A carriers. Table 2.1 shows trends in several performance statistics for the fiscal years 1976 to 1983. (All dollar figures in the table are in constant 1983 dollars.)

The most striking feature of the Part A program is the steady decline in the average cost of processing a claim. In terms of the purchasing power of the dollar in 1983, the average cost per bill (total administrative cost divided by claims processed) fell from $9.26 in 1976 to $5.58 in 1983. The decline in real cost is a notable achievement in light of the rapid inflation of the period.

Two explanations are commonly offered for the decline in Part A bill processing costs. One explanation is that technological changes in the application of computers have made it possible to process bills ever more efficiently. Evidence for this argument is found in the rising productivity of claims processing workers and the declining costs of data processing. In 1976, it was possible for the average worker to process only 3,919 bills per year compared to 9,169 bills per year in 1982.[1]

[1]See Analysis of Intermediaries' and Carriers' Administrative Costs, FY 1981, Table A-7, and FY1971, Table A-6.

Table 2.1 Part A Intermediary Performance Indicators (all dollars in constant 1983 dollars)

Fiscal Year	Cost Per Claim	Mean Processing Time (days)[b]	Percent of Bills with Utilization Errors[c]	Administrative Costs as percent of Benefit Payments[a]	Payment Per Bill[a]
1976	$9.26	10.5	2.1%	1.3%	$729
1977	8.73	10.2	2.0	1.1	758
1978	7.86	10.2	2.1	1.0	756
1979	7.29	10.1	2.0	1.0	763
1980	6.52	10.0	1.9	0.9	769
1981	6.06	9.3	1.8	0.8	793
1982	5.46	8.1	1.9	0.6	843
1983	5.58	6.8	1.5	0.7	842

[a]AAI computations based on HCFA/BPO Analysis of Intermediaries' and Carriers' Costs, Table A-6, various issues.

[b]HCFA/BPO Quarterly Part A Processing Time Report.

[c]AAI computations based on HCFA/BPO Quality Control Reports.

A second explanation for the improved cost performance of Medicare intermediaries is that the government in recent years has worked to remove poorly performing intermediaries and to tighten program performance standards. Evidence of a tougher Medicare program is found in the fact that there were 82 Part A intermediaries in 1976 and only 62 in 1983. Examination of HCFA's annual reports reveals that terminated intermediaries generally had records of high cost performance.

There has been evidence in earlier special studies which suggests that the government could have moved more forcefully to tighten program standards. Some criticisms have been directed specifically at the Part B portion of the Medicare program. However, the similarity of program administration implies that Part A would be likely to suffer from similar problems. In their respective criticisms of the early Medicare program, both the GAO (1979) and the Perkins Committee (1974) noted an unacceptably wide variance in costs among the carriers. The Perkins Committee in particular attributed the wide variance primarily to differences in managerial efficiency on the grounds that variation in factors such as wages or the size of carrier operations were not able to explain cost variation satisfactorily. Another analysis by Hsaio (1978) found that Medicare administrative costs were 26 percent higher than the administrative costs of the privately administered Federal Employees Health Benefit Program (FEHBP). He attributed this difference to (i) greater competition in the administration of the FEHBP, (ii) higher wage scales among federal employees administering portions of Medicare, (iii) profit seeking incentives in the FEHBP and (iv) stronger cost and utilization control in Medicare.

Notable cost variation still exists in Medicare Part A. This suggests that a group of high performance intermediaries have been associated with many

of the Part A improvements while another group of relatively inefficient intermediaries is still lagging in terms of achieving cost reductions. We explore the relation of contractor performance to costs later in this chapter.

2.2.2 Speed and Accuracy of Payment

In recent years, there have also been improvements in the speed and accuracy of claims processing which have not been as dramatic as the historical trend toward lower cost per claim. As shown in Table 2.1, mean processing time (i.e., the average number of days it takes to process a bill from initial receipt to final bill disposition) has gradually declined from 10.5 days in 1976 to 6.8 days in 1981. Faster processing time reduced the time that beneficiaries and providers must wait for reimbursement. The variation in processing time for the intermediaries has also declined over this period, indicating that intermediaries have moved toward greater uniformity in the efficiency of their operations.

A very slight improvement in accuracy has accompanied increases in the speed of processing. This is shown by the percent of bills with utilization errors which has declined from 2.1 percent in 1976 to 1.5 percent in 1983. (This statistic measures the percent of bills with utilization related errors that were found in a statistical sample of intermediaries' processed bills.) This decline is extremely small through 1982 but large for 1983, suggesting that the improvement may not be a permanent change. The trend toward better speed and the indication of a possible improvement in accuracy are consistent with the argument that greater automation in bill processing and more extensive monitoring of the program by the government have led to qualitative improvements in productivity.

2.2.3 Benefit Payments

A further indicator of improvement in the administration of the Part A program is the steady decline which has occurred in administrative costs as a percentage of benefit payments. In the early 1970s, administrative costs were 1.8 percent of the value of benefit payments, while a decade later these costs are in the range of less than one percent. By itself, the relative decline in administrative costs could be merely an indicator of the explosion in medical care prices which have led to higher benefit payments. However, the other favorable indicators of lower real cost per claim, faster processing, and slower error rates support the argument that improvements in administration are at least partly responsible for the favorable trend in administrative cost relative to benefit payments.

The importance of seeking continued improvement in the administration of Medicare Part A is illustrated by the rising level of benefit payment per bill. In 1976, the average bill required reimbursement for services in the amount of $729 (in terms of 1983 dollars). Today, the average bill is for $842. (One hopeful sign for the Medicare program is the virtual absence of any increase in payments per bill from 1982 to 1983. This may reflect a favorable result by Medicare's new Prospective Reimbursement Program.)

The trend toward higher Part A benefit levels reflects national trends in medical prices and utilization. In recent years, as shown in Table 2.2, national trends in medical prices suggest that roughly half of the increase in Medicare benefit payments per enrollee is due to inflation, while the other half reflects a real growth in utilization.

In the next several sections, we explore trends in factors which are likely to have contributed to the generally favorable performance of Medicare intermediaries. We begin with a discussion of trends in input prices. This

is followed by discussions of the comparative performance of intermediaries who are either Blue Shield Plans or commercial insurance companies. Next, we discuss the role of intermediary size and the existing evidence that economies of scale may be important. This is followed by a review of intermediary performance in relation to the extent of audit activity undertaken by various intermediaries.

Table 2.2: Benefits Per Bill in Medicare Part A, Fiscal Years 1976-1983

Fiscal Year	Actual Dollars	In 1983 Dollars Adjusted for General Inflation Only*	In 1981 Dollars Adjusted for Inflation in Hospital Charges**
1979	448	729	1017
1977	493	758	1003
1978	528	756	968
1979	579	763	953
1980	637	769	927
1981	718	793	910
1982	812	843	889
1983	842	842	842

*Adjusted using GNP Implicit Price Deflator.

**Adjusted using the Consumer Price Index for hospital charges.

2.3 Trends

In this section, we will review some major trends in the costs of labor and materials which have been experienced by Part A intermediaries. Our discussion highlights factors which have helped or hindered the favorable trends in cost and performance discussed in the previous section. Following this section, we consider other organizational factors which are also thought to explain trends and variations in carrier performance.

Medicare intermediaries, like all industries, have had to adapt to the general inflation which prevailed during the late 1970s. Cost reimbursed intermediaries have been in an ambiguous position in facing inflation. In principle, the intermediaries are reimbursed by the government "for cost"; they are supposedly able, therefore, automatically to pass on to the government whatever increases in wages and input prices they experience. However, the process of "passing on" inflationary costs is not painless to the intermediaries. Intermediary budgets are negotiated with HCFA on an annual basis. Proposed increases in wages, rent, and other expenses usually have had to be negotiated subject to federal guidelines. In the negotiation process, intermediaries have been under pressure to substitute away from using inputs which have experienced relatively high rates of inflation.

In Table 2.3, we show some comparative trends in input prices for labor, rent, and computer services as experienced by Medicare intermediaries. The table presents input prices averaged across all intermediaries[1] where prices are in constant 1983 dollars.[2] As measures of labor cost, we have the average weekly salary of clerical workers and the average annual salary of senior systems analysts. Clerical workers comprise the majority of a intermediary's work force while senior system analysts are key personnel for computer operations. Intermediaries who fail to pay wages at these levels are likely to experience higher than average attrition and they may have difficulty in recruiting new staff of comparable quality. As shown in Table 2.3, clerical salaries have remained virtually constant since 1976 after adjusting for inflation, while system analysts salaries have

[1]Mean, weighted by bills processed.

[2]Dollar figures were deflated by the Gross National Product Implicit Price Deflator.

Table 2.3: Trends in Major Input Costs for Part A Intermediaries, 1976-1983 (all figures in constant 1983 dollars)

	1976	1977	1978	1979	1980	1981	1982	1983
Average Weekly Salary, Clerical [a,b]	$173	177	176	178	176	173	172	177
Average Annual Salary Senior Systems Analyst (000)[c]	31.8	32.2	31.9	31.2	30.2	29.9	30,9	36.1
Rental Expense (dollars per square foot)[d]	9.60	10.12	10.11	10.01	9.44	10.52	10.79	10.69
Large Computer Index (1983 = 100)[e]	635	446	309	212	144	100	NA	NA
Small Computer Index[e]	351	278	218	169	109	100	NA	NA

[a]Weighted Mean for all Intermediaries, weighted by Bills Processed

[b]Source: Area Salary Differentials (Life Office Management Association), various years 1976-1983

[c]Source: Computations by Author based on data in Datamation, various issues

[d]"Total Rental Income" in dollars per square foot. Source: Downtown and Suburban Office Building Experience Exchange Report, various issues 1976-1983 (Building and Office Managers Association International)

[e]Indices Developed by Author from data in Branscomb, Lewis M. "Electronics and Computers: An Overview" and Birnbaum, Joel S. "Computers: A Survey of Trends and Limitations" Science, Volume 215, February 12,1982, pp.756 and 865

fluctuated slightly up and down with a notable rise in 1983 as the economy emerged from a recession. Office space expense is also an important component of intermediary costs. Medicare intermediaries may either rent commercial office space or they may charge the government rent for occupied space leased from their parent organization. In terms of economic theory, charges for this leased space should reflect the market rent which the firm could collect if the space were leased on the open market. In practice, charges for leased space are determined by allocating the mortgage and operating cost of a building according to the amount of floor space used by the Medicare intermediary. In Table 2.3, we have tried to measure prevailing market rents in terms of the dollars per square foot of floor space as reported by the Building Owners and Managers Association International (BOMA). As shown in the table, rental expenses per square foot increased from $9.60 in 1976 to $10.69 in 1983 as measured in inflation adjusted dollars. That is, the cost of rented space increased slightly more rapidly than did general inflation. A more detailed examination of rental data for cities with Medicare Intermediaries also revealed considerable year to year variation in rents which apparently reflect local surges and downturns in building activity. It is unlikely that Intermediaries actually face large rental fluctuations since they traditionally have sought to lease or purchase long term space in the expectation that their Medicare contract would run for several years.

Computer equipment is also an important input in Medicare bills processing. While it is widely acknowledged that computer costs are rapidly falling, indices of computer costs are difficult to construct because machine configurations are rapidly changing. In Table 2.3, we present two indices of computer cost, one for large mainframe computers and the other for minicomputers. The indices are based upon the total cost of executing a standard

number of instructions using the most modern equipment. Both indices show rapid declines in computer costs in spite of the offsetting effects of general inflation.

Examination of these trends in input costs thus shows that intermediaries were likely to have been under pressure to economize on the use of office space and to substitute away from labor in favor of computerized operations during the 1976-1983 period. These trends support the frequently heard argument that the declining cost of Part A claims processing has been made possible largely by favorable trends in the technology of claims processing.

2.4 Blue Cross and Commercial Intermediaries

In this section we review the performance of intermediaries who belong to two different parts of the insurance industry namely Blue Cross plans and commercial insurance companies. Our review of recent performance finds that Blue Cross plans generally have lower total bill processing costs, faster processing time, and very slightly lower errors in processing. These differences seem to arise because Commercial intermediaries processes a larger proportion of claims from Skilled Nursing Facilities (SNFs) and Home Health Agencies (HHAs). As a consequence, Commercials are dealing with a bill workload that has not been as susceptible to automated claims submission.

There have been a number of previous studies of the relative efficiency of Blue Cross plans and commercial insurance companies as Medicare Part A Intermediaries (Hsaio, 1978; Tseng, 1978; Blair and Vogel, 1975) or Part B Carriers (Abt Associates 1982; Blair and Vogel, 1975; Frech 1973;). Each of these studies has addressed a fundamental issue in economic theory namely, whether Blue Cross plans behave differently from profit seeking organizations. The working hypothesis of most of these studies has been that Blues

would probably be less efficient than Commercials due to their lack of an internal profit incentive. Some of this inefficiency would tend to show up in the form of higher overhead costs and some portion of these costs would be allocated under normal cost accounting rules to the Medicare program. The result would be that Blues would show higher costs as Medicare carriers and intermediaries.

Failure to confirm this working hypothesis would suggest two alternatives. First, Blues and Commercials might actually be equally efficient in their various lines of business. Second, Blues and Commercials might actually differ in efficiency in their private lines of business but the cost allocation rules of Medicare contracts might effectively insulate the government from having to absorb any differences in overhead costs which arise in the private lines of business.

Research findings on the relative efficiency of Blues and Commercials in the Medicare Part A program have not been unanimous. Blair and Vogel (1975) examined data on the performance of Intermediaries in 1971 and concluded that a statistical comparison of their costs would not be appropriate because Commercials processed a much higher proportion of bills from nursing homes. Bills from nursing homes were more expensive to process because they required more adjudication which seemed to be due to a high turnover rate among providers during this early period in Medicare's history. Tseng (1978) later attempted a statistical analysis of intermediary costs using data for 1976. He found that Blue Cross plans had significantly lower net administrative costs per bill but higher audit and reimbursement costs per provider than did Commercials. He also found that these cost differences could not be explained by differences in the size and composition

(i.e., the percentages of bills received from various types of providers) of the workload, in the number of providers serviced, or in the productivity of workers.

Studies of Part B administrative costs have shown a narrowing of cost differences between Blues and Commercials over the history of the program. In an analysis of data for the period from January to March of 1970, Frech (1973) found substantially higher costs, higher errors, and slower claims processing by Blues relative to Commercials. Analysis of a full year of data for 1972 by Blair and Vogel (1975) found much weaker evidence of any differences. An analysis of data for 1976-1981 by Abt Associates (1982) found no statistically significant differences in costs, error rates, or processing speeds. The Abt Associates analysis notes that these differences in findings may simply reflect the successive application of better statistical methods to more comprehensive data; however the Abt study favored the argument that real improvements in the administration of Medicare were the more likely explanation for the narrowing of differences between Blues and Commercials between 1971 and 1981.

Hsaio (1978) has also explored the question of whether privately administered health insurance plans operate more efficiently than publicly administered plans. His study compared the administrative costs of the privately operated Federal Employees Health Benefit Program (FEHBP) with the publicly administered Medicare program. His study focused on the total administrative costs of these programs, that is costs lodged within both the federal government and its fiscal intermediary contractors. He found that administrative costs per claim were lower for FEHBP. In fiscal years 1971 and 1972, FEHBP costs per claim were respectively 35 percent and 18 percent lower than Medicare's. Hsaio attributes the differences in costs to (i) greater

competition among fiscal intermediaries in the FEHBP, (ii) relatively high wage scales for federal employees involved in the administration of Medicare, (iii) greater effort by the Medicare program to control benefit payments. Since Blue Cross plans and commercial insurance companies are involved in both programs as fiscal intermediaries, Hsaio's study supports the argument that an organization operates more efficiently in a competitive situation. His study does not directly address the issue of whether Blues are inherently more efficient than Commercials in the administration of the Medicare program itself.

In this section we will review differences in cost, performance and workloads which occur among Blues and Commercials.

Our discussion in this section will mainly cover the period from 1976 to 1983 for which we have comparable data which permit us later in the chapter to conduct a detailed statistical analysis of the effect of performance and workload differences upon Intermediary costs. However, some historical information on earlier years will be reviewed as appropriate.

We should begin by noting that the number of Medicare Intermediaries has has been gradually declining since the start of the program. In FY 1969, the Medicare program listed 74 Blue Cross plans, 10 commercial insurance companies and one public health department among its intermediaries.[1] In FY 1983, there were only 55 Blue Cross plans and 7 Commercials as intermediaries.[2] The surviving commercial intermediaries (i.e. Aetna, Cooperative, Hawaii Medical, Kaiser, Mutual of Omaha, Prudential, Travelers)

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[1]USDHEW, Analysis of Intermediaries' Administrative Cost for Fiscal year 1969, Exhibit 8I-21-8-1).

[2]USDHHS, HCFA, Analysis of Intermediaries' and Carriers' Administrative Costs, Fiscal Year 1983.

are all large insurance companies or prominent regional health care providers. The reduced number of Blue Cross plans reflects both a weeding out of intermediaries by the Medicare program and a consolidation of Blue Cross plans by the national Blue Cross Association.

Table 2.4 compares the Blues and Commercials in terms of their total administrative cost per bill, mean processing time per bill, utilization error rate, and benefit dollars paid per bill for the period from 1976 to 1983. As noted, both Blues and Commercials have roughly halved their bill processing costs over this period after adjusting for general inflation. Mean cost per bill for Blues were 80 percent of those for Commercials in 1976 and are now 85 percent. Mean processing time has declined by about four days each for both the Blues and the commercials. Commercials have traditionally had higher processing times than the Blues, especially over the period from 1978 to 1982. Utilization error rates (i.e. the percentage of bills returned by the government to the Intermediaries due to discovered errors relating to utilization of services) have also declined by 25 percent for Blues and by 33 percent for Commercials over this period. Commercials have consistently had error rates that were one third to one fifth higher than those for Blues. Benefit payments per bill have been about equal for Blues and Commercials over this period with payment levels differing by one to four percent. Neither type of intermediary is consistently higher than the other in this category.

It is plausible that workload differences may account for performance differences between Blues and Commercials. Table 2.5 shows the mean percentage of bills which are received by Blues and Commercials from various kinds of providers. Blues receive only about one percent of their claims from Skilled Nursing Facilities (SNFs); Commercials received 8 percent of their claims from SNFs in 1983 and 15 percent from SNFs in 1976. As a consequence, Blues have

Table 2.4: Mean Performance Statistics for Blue Cross and Commercial Intermediaries in the Part A Program, Fiscal Years 1976-1983 (all dollars in 1983 equivalents)

Fiscal Year	Cost per Bill		Mean Processing Time		Utilization Error Rate		Benefits/Bill	
	Blue	Commercial	Blue	Commercial	Blue	Commercial	Blue	Commercial
1976	$9.02	$11.26	10.4	11.3	$2.0	2.7	$732	$706
1977	8.47	10.74	10.1	11.0	1.9	2.6	762	760
1978	7.54	9.86	9.1	18.3	2.1	2.5	757	748
1979	7.01	9.34	8.0	25.6	1.9	2.4	764	792
1980	6.25	8.59	8.9	18.0	1.9	2.3	768	779
1981	5.84	7.68	8.1	17.3	1.7	2.5	792	799
1982	5.22	7.05	7.2	14.0	1.8	2.4	843	843
1983	5.46	6.40	6.7	7.0	1.5	1.8	841	847

Source: HCFA Analysis of Intermediaries' and Carriers' Cost Reports, various years, Table A-6.

Table 2.5: Percent of Bill Volume by Type of Provider for Blue Cross and Commercial Medicare Part A Intermediaries, 1976-1983

Fiscal Year	Blue Cross						Commercial					
	Percentage of Bills Received from						Percentage of Bills Received From					
	Input	Output	SNF	HHA	Other	Total	Input	Output	SNF	HHA	Other	Total
1976	57%	33%	1%	7%	1%	100%	43%	25%	15%	9%	6%	100%
1977	57	32	1	7	2	100	45	26	14	9	6	100
1978	58	31	1	7	2	100	46	26	12	9	7	100
1979	59	30	1	7	2	100	49	25	10	8	7	100
1980	60	29	1	8	3	100	49	25	9	9	8	100
1981	60	29	1	8	3	100	50	26	7	8	9	100
1982	60	28	1	8	3	100	49	24	8	9	10	100
1983	60	27	1	9	3	100	49	23	8	10	11	100

had a much larger portion of their claims concentrated in Outpatient and Inpatient categories. These latter claims are believed to be more susceptible to automated claims processing because they are more likely to be submitted routinely by a provider with an experienced billing department.

Table 2.6 illustrates some of these differences between Blues and Commercials in terms of bill processing automation. The table shows the mean percentage of providers who receive Periodic Interim Payments (PIP) and the mean percentage of machine readable bills (MRB) received by intermediaries for both Blues and Commercials over the period from 1976 to 1983. Under the PIP program, providers are reimbursed on a regular basis with payments based on their estimated bill volume. This arrangement helps to assure the provider of a steady cash flow and it simplifies the bill payment process for the intermediary. Until 1980, Commercials had about 5 percent fewer of their providers on PIP than did the Blues. In 1983 Commercials achieved a significantly higher percentage of providers on PIP (32%) than did the Blues (16%).

The table also shows that Blues have been more successful than the commercials at inducing providers to submit their bills in a machine readable format. In 1976 machine readable bills were submitted to both types of intermediaries in an insignificant percentage. By 1983 however Blues were receiving 32 percent of their bills in machine readable form while Commercials were receiving only 6 percent in that form. Again, the greater prominence of SNF bills in the Commercials' workloads is likely to account for this difference. Machine readable bills, of course, can be processed more rapidly and with fewer errors than can traditional hard copy bills. This factor in turn may account for the higher worker productivity for Blues relative to Commercials shown in Table 2.7. In summary, we find that Blue Cross plans generally have lower total bill processing costs per bill, faster processing

Table 2.6: Percentage of Providers Receiving Periodic Interim Payments (PIP) and Percentage of Machine Readable Bills (MRB) Received for Blue Cross and Commercial Medicare Part A Intermediaries, 1976-1983

Fiscal Year	Blue Cross		Commercials	
	PIP	MRB	PIP	MRB
1976	17%	0%	11%	0%
1977	18	3	13	0
1978	18	6	13	0
1979	20	9	15	1
1980	21	14	15	1
1981	19	17	17	2
1982	20	22	21	5
1983	16	32	23	6

Table 2.7 Bills Processed per Worker by Blue Cross and Commercial Medicare Part A Intermediaries, 1976-1983

Fiscal Year	All Intermediaries	Blue Cross	Commercial
1976	3919	4068	2979
1977	4298	4482	3235
1978	5147	5438	3645
1979	5642	5921	4130
1980	6615	6926	4881
1981	7332	7683	5560
1982	9169	9609	6959
1983	10701	10334	8612

time, and lower errors in processing. These differences seem to arise because Commercial intermediaries processes a larger proportion of claims from Skilled Nursing Facilities (SNFs). As a consequence, Commercials are dealing with a bill workload that has not been as susceptible to automated claims submission. Later in this chapter we examine differences in claims processing cost after controlling statistically for differences in automation and composition of the bill workload.

2.5 Economies of Scale

Several studies have explored the issue of whether administrative cost per claim declines as the size of an intermediary's operation increases. The issue is important because if such economies of scale exist, the government could reduce Medicare administrative costs by eliminating some intermediaries and consolidating their territories. In an evaluation context, the issue is also important: apparent cost savings in fixed price sites may reflect economies which resulted from territory consolidation rather than economies stemming from the contractual incentives. HCFA at various times has in fact proposed to consolidate territories. Furthermore, it is widely acknowledged in the claims processing industry that economies of scale occur. Until recently, there has been only weak statistical evidence to confirm that economies of scale exit in claims processing.

A recent analysis of claims processing costs for Medicare Part B carriers (Abt Associates, 1982) has found strong statistical evidence that economies of scale are important for Part B claims processing. The study examined variation in costs per claim for carriers over the years 1976 to 1981 using the pooled time series cross section methods discussed later in this chapter. The study found that cost per claim falls steadily between annual

claims volumes of 500 thousand to 8.5 million claims per year. Beyond that range the equations estimated disagreed about whether diseconomies of scale begin to appear. Economies of scale range from about 44 cents per claim for carriers with s small claims volume of 500 thousand claims to about one cent per claim for carrier switch six million claims per year. If carriers with less than five million claims per year were simply aggregated into larger units, the long run savings would be about $16 million per year or 7 percent of Part B annual Administrative costs.

The most extensive analysis of Medicare claims processing costs prior to the Abt study was that performed by Blair and Vogel (1975). Their analysis found that cost per bill tended to increase with bill volumes for Medicare Part A while costs per claim had no significant relation to claims volume for Part B. These results apparently are due to the fact that Blair and Vogel had only one year of cross sectional data available for analysis. As a consequence, their study was able to explain only about 30 per cent of the variation in bill processing costs. The subsequent Abt study of Part B costs was able to look at a longer time series of data which made it possible to obtain a better resolution on the relation of Part B costs to claims volume. Our analysis later in this chapter will test to see if economies of scale are present for Part A.

A similar analysis of administration cost per claim was conducted by the Perkins Committee using data for Part B carriers for the years 1969 to 1973. Results again found no statistically significant evidence of economies of scale. Like Blair and Vogel, the Perkins Committee also found that their regression equations had weak explanatory power (i.e., low R^2s). Frasca and Leung (1977) have also studies economies of scale in Medicare data processing. Their analysis was based upon Part B carrier data for 1976. They found

no statistically significant relationship between cost per claim and claims volume. Their analysis, however, did not control for as many other variables affecting carrier performance as did the Blair and Vogel analysis.

The belief that economies of scale exist is widely held in the claims processing industry. Some evidence for this belief is found in a report by the General Accounting office (1979) which studied the extent of economies of scale. Unlike the previous statistical studies, the GAO relied upon hypothetical cost estimates prepared by six Part B carriers serving parts of New York, California, and Texas. Each carrier was asked to estimate how much its costs would increase if it had to absorb large additions in claims volume. Estimates assumed that there were no changes in technology, in the carrier's computer system, or in fixed overhead. That is, carriers assumed that only labor, floor space, and similar semi-fixed costs could vary. Each of the carriers indicated that it could absorb large additional claims volume and achieve lower average total costs per claim. That is, the incremental cost of absorbing new claims volume was less than a carrier's initial average cost.

The GAO reported that there appeared to be no limit to the ability of carriers to reduce costs by expanding volume. Over the range of assumed volume increases, carriers estimated that costs would steadily fall. GAO also pointed out that its assumptions did not allow for all of the economies that might be achieved by increasing territory size such as renegotiation of computer subcontracts or major relocation of facilities.

Some circumstantial evidence is available in HCFA's regularly published program statistics to suggest that cost per bill may not be lower for intermediaries with larger claims volumes. Table 2.8 shows the mean cost per bill for intermediaries in each of the four "peer groups" which HCFA uses to classify intermediaries by size. Note that the intermediaries in the peer

Table 2.8: Administrative Cost per Bill by Peer Group for Part A Intermediaries, Fiscal Year 1982 (standard deviation in parentheses)

Intermediaries in Peer Group	Range of Bill Volume (000)	Average cost per bill	Range in cost per Bill	
			Highest	Lowest
Blue Cross Plans:				
15	2,000 - 714	$ 4.83	$ 5.76	$ 3.60
17	720 - 424	4.58	5.47	2.96
12	422 - 214	4.93	5.71	3.59
14	200 - 56	5.34	6.78	3.76
Commercials:				
8	2,600 - 73	6.79	8.64	4.23

Source: HCFA, Analysis of Intermediaries' and Carriers' Administrative Costs October-September, fiscal year 1982, Table A-6.

group with the smallest bill volume (56 thousand to 200 thousand bills) have an average cost per bill of $5.34. The next three groups of intermediaries with larger bill volume have cost per bill ranging from $4.58 to $4.93. These figures hint that costs may decline with bill volumes, but this decline flattens out fairly quickly. Much of our statistical analysis, in Section 2.8, is spent in determining if this hint of a relationship between cost and scale is indeed present after adjusting for factors other than claims volume (e.g., wages, assignment rates) that should also affect claim processing costs.

2.6 Computer Systems

As we have noted earlier, falling computer costs and rising productivity have been important factors contributing to the historical trend toward lower Medicare processing costs.

As computer systems have become more sophisticated, they have increased the productivity of not only main line bill processing but also support activities such as utilization review. The computer's intimate involvement in virtually all phases of bill processing makes it dangerous to analyze computer processing costs apart from the use of other inputs. For example, one of the striking features of Medicare processing is that narrowly defined "computer costs" (rental or purchase costs for a mainframe, its software, and support technicians) have been falling on a per bill basis over a period where the computer has actually been doing more work in the sense of running more logical checks or performing more arithmetic operations per bill. Computers have also served as substitutes for manual operations performed by clerical staff. Discussions with Medicare intermediary managers, for example, have revealed that some major computer system upgrades (replacement of older

software and hardware with new configurations) have allowed a reduction of 30 to 50 percent in clerical staff once the new system is fully operational.

Since the beginning of Medicare, intermediaries have had several choices in their selection of computer systems both in terms of hardware and software. One option always open to an intermediary has been to operate an "in-house" system where the carrier develops or supports its own software. This approach allows the intermediary maximum control over computer operations but it can involve considerable expense in writing, debugging, and maintaining software. In any year, in-house systems have been maintained by 25 to 30 intermediaries. Slightly more than one third of the Blues have elected to use an in-house system. One commercial has used an in-house system in any particular year.

Since the early 1970's, the Federal Government has sought to reduce aggregate software costs to the Part A program by developing and maintaining a "Model A" software package. The package is offered as "public domain" software, available to intermediaries without charge. Roughly two thirds of all Blues and all but one of the commercials use the Model A system. In our statistical analysis of costs, later in this chapter, we will explore the relationship between Model A system use and cost.

2.7 Provider Audits

Medicare Intermediaries are required to perform two distinct functions--process bills and audit providers--which could in principle be performed by separate contractors. Efforts devoted to auditing accounted for one third of the costs of Medicare Intermediaries in 1983.

Until the introduction of the Medicare Prospective Payment System (PPS) in October of 1982, Medicare paid for hospital services on the basis of a

provider's actual cost. Audits served the important function of making sure that Medicare paid for only its fair share of these costs. With the introduction of PPS, Medicare now pays a fixed amount for each hospital admission based on diagnosis. Audited costs still play a role in this system because the PPS payment formula is being gradually phased in over a three year period so that the fixed diagnostic based payment will eventually be the sole basis for inpatient payment. When the PPS system is fully implemented, a hospital's actual inpatient costs and the corresponding importance of hospital inpatient cost audits will be much less important to the Medicare program. However, it can be expected that HCFA will want to continue to conduct audits on at least a sample of hospitals in order to monitor its inpatient cost allocation experience with PPS and in order to eventually update the PPS reimbursement formulas.

Table 2.9 shows how the frequency and costs of audits have varied over time. The table shows the percentage of providers who have been fully audited each year and the total costs of all audit activities relative to bills processed. As shown, the intensity of audit activities do vary from year to year. In 1982 only about 42% of providers were audited (due in part to the disruptions of implementing PPS) while in 1983 HCFA audited about 79 percent of all providers. From 1976 to 1982 there was a gradual decline in the percent of providers audited. Blue Cross plans tend to audit a higher percentage of their providers than do the Commercials. However, relative to bill volume, commercials have high audit costs. This is due apparently to the high proportion of SNF claims which are processed by the Commercials. Since differences in audit frequency and cost are noticeable both over time and among types of intermediaries, our statistical analysis of costs later in this chapter will adjust for these factors.

Table 2.9: Mean Percent of Providers Audited and Mean Audit Cost Per Bill for Medicare Part A Intermediaries 1976-1983. (All figures weighted by bill volume; all dollars in 1983 equivalents).

	Audit cost per bill			Percent of Providers Audited		
Fiscal Year	All	Blues	Commercials	All	Blues	Commercials
1976	$1.73	$1.73	$2.39	60%	64%	29%
1977	1.69	1.63	2.29	65	68	42
1978	1.96	1.86	2.65	53	55	31
1979	1.88	1.77	2.78	54	55	37
1980	1.85	1.70	2.97	51	52	37
1981	1.78	1.64	2.67	46	46	32
1982	1.63	1.53	2.38	42	38	23
1983	1.90	1.84	2.31	79	NA	NA

Source: Authors' computations based on HCFA Analysis of Intermediaries' and Carriers' Cost Reports, various years.

This concludes our review of historical trends in intermediary performance Our review has found that the Part A program has improved over the last decade in terms of administrative cost and levels of intermediary performance. We have also reviewed some previous studies which have looked at how intermediary costs are influenced by their size, and organizational affiliation.

In the following section we present an econometric analysis of intermediary costs and benefit payments. The analysis will consider the effects of the separate factors we have just discussed and also consider how the experimental fixed price contracts have affected intermediary performance.

2.8 Model of Intermediary Costs and Benefit Payments

In this section we will describe our basic method for determining the effect of fixed price contracts on intermediary performance. Our analysis focuses on the administrative cost of Medicare Part A bill processing and its impact upon the level of benefit payments. Our analysis also considers how other factors such as input prices, bill volume, Blue Cross or Commercial organization, computer systems, the frequency of audits, etc. affect bill processing costs and benefit payment levels. Subsequent sections describe refinements of the analysis.

At the theoretical level, the intermediary is assumed to minimize a cost function where total cost (C) is a function of a firms' product mix (X_1, X_2, ... X_n) and a vector of input prices (P_1, P_2, ... P_m). The firm's products are endogenous variables whose mix is governed by the cost minimization process. Input prices are exogenous to the firm which is

considered to be a price taker in a larger regional market. Other uncontrollable factors (Z_1, Z_2, ... Z_k) which may affect the firm's efficiency may also affect costs. The firm's problem is to minimize the function:

$$C = f(X_1, X_2, \ldots X_N, P_1, P_2, \ldots P_M, Z_1, Z_2, \ldots Z_K)$$

In applying this theory to Part A intermediaries we would like to consider key features of the production process such as processing speed, error rates, development rates, and audit intensity to be intermediate outputs whose mix is governed by the cost minimization goal. Unfortunately, we do not have available enough data to fully model this production and cost minimization process because we have only rudimentary information on prevailing input prices and the internal constraints which a firm may consider in undertaking cost minimization. By default, many of these theoretically endogenous factors must be treated as exogenous when we actually come to the point of estimating these equations with econometric methods.

Other features of the intermediary are also treated as exogenous in our analysis for reasons that are theoretically more acceptable. The organization of the intermediary as either a Commercial or as a Blue Cross operation is one such feature. Another exogenous factor is the volume and mix of bills processed by the intermediary. In many industrial settings it would be erroneous to treat output as an uncontrollable variable. However, this approach is appropriate for Medicare intermediaries because their bill volume is governed largely by the provider's election to use them as an intermediary. The type of provider making the choice (e.g., a hospital or an SNF) in turn determines the mix of bills that will be sent to the intermediary.

Application of our theoretical approach also requires some compromises caused by either weak data or ambiguities about which factors facing an

intermediary are really uncontrollable. For example, our model below uses the percentage of claims received in machine readable form as an exogenous variable. This is, arguably, an endogenous variable since the intermediary can play a large role in discouraging or encouraging machine readable bill submissions. However, we have to treat this variable as exogenous since we have no data (and even worse, very few ideas) about factors which encourage some intermediaries to encourage this activity more than others.

Our basic approach has been to estimate a two equation model of intermediary performance where one equation describes performance in terms of cost per bill and the other describes total benefit payments. The equations can be represented as the following:

(1) Cost per bill = f (fixed price contract, bill volume, bill mix, audit intensity, automation, development rate, input prices, Blue vs. Commercial organization, time trends)

(2) Benefit Payments per bill = f(fixed price contract, bill volume, bill mix, audit intensity, automation, development rate, input prices, Blue vs. Commercial organization, time trends)

Equations (1) and (2) each state that total cost per bill (TCPB) and Benefit Payments per Bill (BILLPAY) are a function of the presence or absence of a fixed price contract, as well as intermediary characteristics. These characteristics include the volume of bills processed, the mix of bills submitted for outpatient, inpatient, home health and SNF services, the degree of automation in claims processing as shown by factors such as the percentage of bills submitted in machine readable form and the percentage of providers who are paid under the periodic interim payment (PIP) program, the percentage of bills which the intermediary develops for further information prior to processing, local prices for inputs, and whether the intermediary is a Blue Cross or Commercial organization. Finally, we add to the model a series of

dummy variables which denote the year to which an observation applies; these dummies are supposed to capture any other factors which trend over time that have not been captured by the other variables.

Since equation (2) contains exactly the same variables as equation (1) we have to view the two equations as essentially reduced form equations which represent the outcome of a production process that is more complex than these equations depict. This specification is a compromise in theoretical elegance brought about by the absence of data adequate to fully describe the provider's election of a Medicare Intermediary.

It would be more elegant theoretically to measure the dependent variable in equation (2) as benefit payments per Medicare enrollee or, better yet, per enrollees who actually use Medicare benefits in a particular year. Unfortunately, it is not possible to adjust benefit payments for the number of enrollees that are served by a particular intermediary. This problem arises because providers have the right under the Medicare program to elect the intermediary that is to process their bills. This means that an enrollee living in a particular area may be serviced by more than one intermediary if his providers have elected different intermediaries. This problem is particularly difficult for any analysis of SNF benefit payments and benefit payments made by Commercials who often serve providers in different parts of the country. (For a further discussion of this problem see Blair and Vogel, 1975, pp. 126-129.) In order to avoid the dangers of undercounting or overcounting beneficiaries due to the election process, we have consequently chosen to normalize benefit payments by claims volume.

It would also be more elegant if we could model benefit payments as a function of total cost per bill. This would be a "structural" model (amenable to estimation by a procedure such as two stage least squares) showing the

direct interaction between administrative expenses and benefit payments. To estimate structural models with interaction, it is necessary to have in each of the equations some variables that are not present in the others.[1] Unfortunately, many of the variables listed above are plausible in most of the equations that we might choose to specify. What we need are some variables that are unique to benefit payment vs. administrative expense vs. administrative performance. For example, if we had data which distinguished input prices for medical care providers from input prices for general administrative work, we could estimate a model which allows for interaction between the two equations. The logic here would be that the costs of medical care providers -- and hence Medicare benefit payments--are influenced by a set of factors that are different from those which influence intermediary administrative costs.[2] Since we do not have data which offer this kind of detail, we have estimated our two equations as reduced form equations where interactions are not present. Results of this exercise are presented in Section 2.9. We then check the results of the reduced form model by considering another structural model which allows for a more elegant and detailed description of intermediary activities. Results from the structural model appear in Section 2.10. While we cannot be certain that either reduced form equations or the structural model is the best possible description of an intermediary's production

[1]See for example the discussion of the equation identification problem in Henri Theil, Principles of Econometrics (Wiley, 1971) pp. 446-450 and pp. 489-497

[2]In our previous study of Part B carriers it was possible to model the interaction of benefit payments with administrative costs because regional data on prices and medical care resources were. Part B carriers serve well defined geographic territories in which providers have no right to elect another carrier. This fact considerably eases the problem of defining variables which may be appropriately included in one of the above equations and not in the other.

process, an agreement of these models about the effects of fixed price will give us considerable confidence about our conclusions in regard to the effects of the experiments.

A final practical consideration in estimating these equations is that data which measure the variables noted above are not always available for as many years as we might wish. This problem is particularly true for data relating to audit intensity and the quality of bill processing. Intermediary scores from the Cost Report Evaluation Program (CREP) would be an excellent measure of audit performance if they were consistently available for several years. Similarly, scores from the Contractor Performance Evaluation Program (CPEP) would be good measures of contractor performance in several areas relating to bill processing, beneficiary services, general administration, and fiscal management.

Since our goal is to estimate a pooled time-series/cross-section model, we were not able to use CPEP and CREP scores in our regressions because they are not available for more than a few recent years coinciding essentially with the years of fixed price contracting. In order to be able to make comparisons of the periods before and after the start of fixed price, we need variables which are consistently available. For this reason, we have defined our variables to include measures of performance which are available for a longer period of time. These include, for example, variables such as the mean processing time for bills, the percent of bills which received further development, and the percent of providers subject to field audits. A full list of variables is presented later in this chapter.

It would also be more elegant if we could examine the intermediary's production process in more detail. For example, we might consider how factors such as the development rate and the presence of bills received in machine

readable form affect the speed of processing and how processing speed in turn affects costs. We consider a model of this type later in Section 2.10.

2.8.1 Method of Estimation

Our principal method for estimating the cost and benefit payments equations is a type of multivariate regression analysis known as the fixed effects method (or the covariance model technique). The fixed effects method estimates a regression equation where there is a separate constant term (a_1) for each intermediary. The fixed effects model is written:

$$(2.3) \qquad Y_{it} = a_1 + a_2 + a_3 + \ldots a_m + BX_{it} + e_{it}$$

where Y is the dependent variable, X is a vector of independent variables, and e is a random error term. Subscripts denote the i^{th} intermediary in the t^{th} year where there are a total of M intermediaries and T years.

The fixed effects method assumes that each intermediary has some unique feature (e.g., managerial efficiency, regional costs of doing business, etc.) which distinguish it from all other intermediaries. This is the notion of a separate constant term for each intermediary.[1] Otherwise, intermediaries are alike in the way that they respond to outside factors (e.g., wages and input prices) measured by the X vector and they are alike in encountering certain random shocks (e.g., higher energy prices) which interfere with their operations. In short, the fixed effects method assumes that some intermediaries are consistently better than others (as shown by differences in

[1] A review of alternate estimation methods is found in Hausman and Taylor (1981). A discussion of the need to exclude linear combinations of dummies is found in Johnston (1972).

the values of their intercepts), but all have about the same luck in encountering unexpected situations which help or hinder their operations.

2.8.2 Method of Measuring the Fixed Price Effect

Our approach for measuring the effect of a fixed price contract is to estimate models where there are separate dummy variables to control for baseline features of the fixed price territories and for the presence or absence of a fixed price experiment in a territory. In addition, a series of dummy variables is included to control for any features (e.g., managerial efficiency) that are unique to each intermediary. The model is specified in a form such as the following:

$$Y = a_1\ DM_0 + a_2\ DNY + a_3\ DMOFP + a_4\ DNYFP + g_1\ D_1 + \ldots + g_k\ D_k\ BX + \text{error}$$

Here Y is the dependent variable and X is a vector of other explanatory variables. The separate dummy variables D_1 ... D_k control for the unique effects of the other intermediaries. Coefficients on these dummies can be interpreted as measures of "other unknown differences" or "managerial efficiency." The dummy variables DMO and DNY respectively measure baseline effects in Missouri and New York prior to fixed price while the dummies DMOFP and DNYFP measure the effects of the fixed price contracts. Our use of two sets of dummy variables, one to measure baseline effects and the other to measure effects in the experiment period, allows us to capture the before and after effects of the fixed price experiments.

To determine the effect of a fixed price contract, we examine the difference between the the coefficients for the dummy variables DNY and DNYFP in New York and between the coefficients DMO and DMOFP in Missouri. For example, lets say total cost per bill paid by the government is the dependent

variable. Let the estimated coefficient for New York is $B_{DNY} = B_{DNYFP} = 0.45$. The fixed price effect is the difference B_{DNY} - is, 1.00-0.45 = 0.65. This can be interpreted to mean that claim were 65 cents lower in New York under fixed price compared to what they would have been if the cost reimbursed contract had continued.[1]

Since each of these coefficients is an estimate which has a variance attached to it, we must test to see how likely it is that the difference between these coefficients is larger than chance might allow. One hypothesis to test is that the difference between the coefficients is equal to a specific number (c) such as the .65 found above. Formally, this is the hypothesis HO: $B_{DNY} - B_{DNYFP} = 0$ which is tested with an F statistic to see if the difference in the coefficients (relative to their variances and covariance) is larger than chance would allow.[2]

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[1]Regression coefficients can be either positive or negative in sign. However, it is always the case that DNY - DNYFP > 0 would denote a reduction in cost under fixed price while DNY - DNYFP < 0 denotes an increase in cost. If one thinks in terms of a number line with negative numbers to the left of zero and positive numbers to the right, a cost reduction can be attributed to fixed price whenever DNYFP is located to the left of DNY.

[2]To test the hypothesis we estimate an F statistic which essentially divides the difference in the coefficients by their estimated variances and covariance. In matrix notation this is:

$$F = (a B - c)^2 / (s^2 a (X'X)^{-1} a')$$

this is distributed with 1 and n-k degrees of freedom where n is the number of observations in the model and k is the number of coefficients being estimated. B is a vector of all of the coefficients in the model, s^2 is the mean squared error of the regression, and a is a vector of zeros, 1's and -1's which when multiplied times B produces the difference (BDNY - BDNYFP). For further details see M. Intrilligator, Econometric Models, Techniques, and Applications (1978, p 132).

2.8.3 Method of Measuring Economies of Scale

In estimating our model, we have checked to see how the volume of bills affects intermediary costs. We did this test by experimenting with several different functional forms of the equations to see which form does the best job of explaining variation in the data. The functional form of an equation is the manner in which variables are supposed to interact with each other. In Section 2.9, we report results for cost functions where the bill volume of the intermediary is treated as having either a linear, a quadratic, an inverse or a logarithmic relation to cost per bill. The linear ($y = a+bX$) and logarithmic ($y = a+b\text{Log}X$) assumes that costs (y) may rise ($b > 0$) or fall ($b < 0$) steadily with volume (X). The quadratic equation (e.g., $y = a+bx+cx^2$) was used to see if cost per bill initially falls and then rises (if $b<0$ and $c>0$) for intermediaries with increases in claims volume. That is, we wished to see if cost per bill was related to volume with a U-shaped curve. The downward bend of the left hand side of a U-shaped curve denotes that economies of scale initially exist so that costs per bill fall as a intermediary's bill volume increases from the very low to the moderate range of volume. Furthermore, the upward bend of the right hand side of the U-shaped curve denotes that diseconomies of scale exist so that costs per bill rise as a intermediary's bill volume increases from moderate to very large volume.

In contrast, the inverse equation ($y = a+b/x$) assumes that cost per bill will fall at an ever faster rate (if $b > 0$), thus indicating that only economies of scale are present over the range of the observed data.

If we were to find that the quadratic form does the best job of fitting the data, this would suggest that there is an optimal size for intermediaries which would assure the lowest possible cost per claim. A policy of eliminating both very small and very large intermediaries via consolidations of

territory splitting would be consistent with this finding. In contrast, if we were to find that the inverse function offers the best fit, this would suggest that there is no foreseeable limit to optimal intermediary size. This finding would be consistent with a policy of intermediary consolidation designed to merge several small intermediaries into one new large intermediary. Of course, a finding that there are no economies of scale (that is, the finding of pervious studies) would be consistent with maintaining the status quo where intermediaries exist in a wide range of sizes.

2.8.4 Method of Measuring Cost

The dependent variable in the various versions of the equation is the intermediary's total administrative cost per processed bill. This is measured in two alternate ways. One measure is defined in terms of the cost incurred by the intermediary (TCPB) in processing bills; the other is defined in terms of total payments by the government (TCPBP) for the intermediary's bill processing services. These two measures of cost are identical for cost reimbursed intermediaries but they differ substantially for fixed price intermediaries.

In the New York experiment, there is very little difference (about one cent per bill in 1983 equivalent dollars averaged over the life of the contract) between the intermediary's reported cost per bill and total payments by the government. As discussed in chapter 1, New York experienced a very small "loss" over the contract through FY 83 after one takes account of both the costs incurred by the organization during the implementation period and the incentive payments earned later in the operational phase.

In the Missouri experiment, the intermediary experienced a larger loss (about 55 cents per bill in 1983 equivalent dollars averaged over the life of

the contract) due to the fact that its reported costs exceeded its allowed fixed price payments.

Conceptually, TCPBP is a better measure of cost if one is interested in determining if fixed price contracts were able to save money for the government against the alternative of bill processing on a cost reimbursed basis. On the other hand, TCPB is the better measure of the total economic resources used to process a bill assuming, of course, that these costs were correctly reported by the intermediary.

We should note that measures of economic resources used by a fixed price intermediary are measured by Medicare's standard accounting rules. This measure of cost may not reflect the internal cost of economic resources to the intermediary. Under the fixed price competition (in Missouri) or negotiation (in New York), contractors implicitly choose to factor certain corporate overhead items out of their price to enable them to submit as low an offer as possible. In effect, the contractors choose to offer a price that reflects more closely their internal marginal costs in bill processing rather than their average total cost (inclusive of corporate overhead) as measured by Medicare's accounting rules. The reported costs of fixed price intermediaries are thus an artificial exercise in applying Medicare's accounting rules for cost reimbursed intermediaries. This exercise bears an unknown relation to the firm's internal rules for allocating economic resources. The second equation in our model uses total benefit payments (BILLPAY) as its dependent variable. This variable is measured in the same way for both fixed price and cost reimbursed carriers since there is no difference in the benefit payment function performed by the carrier.

In defining the variables TCPB and TCPBP for use in our regressions, we had to contend with several problems that might bias our results. First, we

had to consider the fact that the schedule of payments under the fixed price contracts was not perfectly synchronized with the rate at which bills were processed. This occurs partly because of implementation costs at the start of the contracts and partly because the schedule of payments is intended to avoid creating cash flow problems for the contractor. If we defined TCPBP to be literally the government's payments divided by claims volume, we would have had a very high cost per claim for the first year of a contract and a very low cost per claim in the final year. This literal definition of cost per bill might result in a false finding that the government had achieved phenomenal reductions in cost over the life of the fixed price contracts! The following table illustrates this problem (all dollars are valued in 1983 equivalents).

	New York		Missouri	
	Cost Reported	Fixed Price Payment	Cost Reported	Fixed Price Payment
1981	$6.70	$6.12	$9.06	$13.52
1982	4.21	4.32	4.65	3.07
1983	3.82	3.97	4.32	3.57
1984	na	na	na	1.47
1981-1983	4.55	4.54	4.98	4.43
1981-1984	na	na	na	3.56

To avoid biasing our results by giving too much attention to these cash flow considerations, we have defined TCPBP to be total payments (valued in 1983 dollars) including the value of contract modifications over the life of the contract divided by total claims processed. We include in our definition of total payments any incentive payments or liquidated damages which may have respectively added to or subtracted from the fixed price. For Missouri, we also counted the government's obligated payments for FY84 along with our own

estimate of bill volume. We did this because payments relative to bill volume are likely to be very low in 1984; if we did not count payments and bills for FY84, we would undoubtedly overstate the government's cost per bill for the FY81-FY83 period that is covered by our regression analysis. In the case of New York, cash flow is very steady from year to year so we did not have to make an adjustment for 1984.

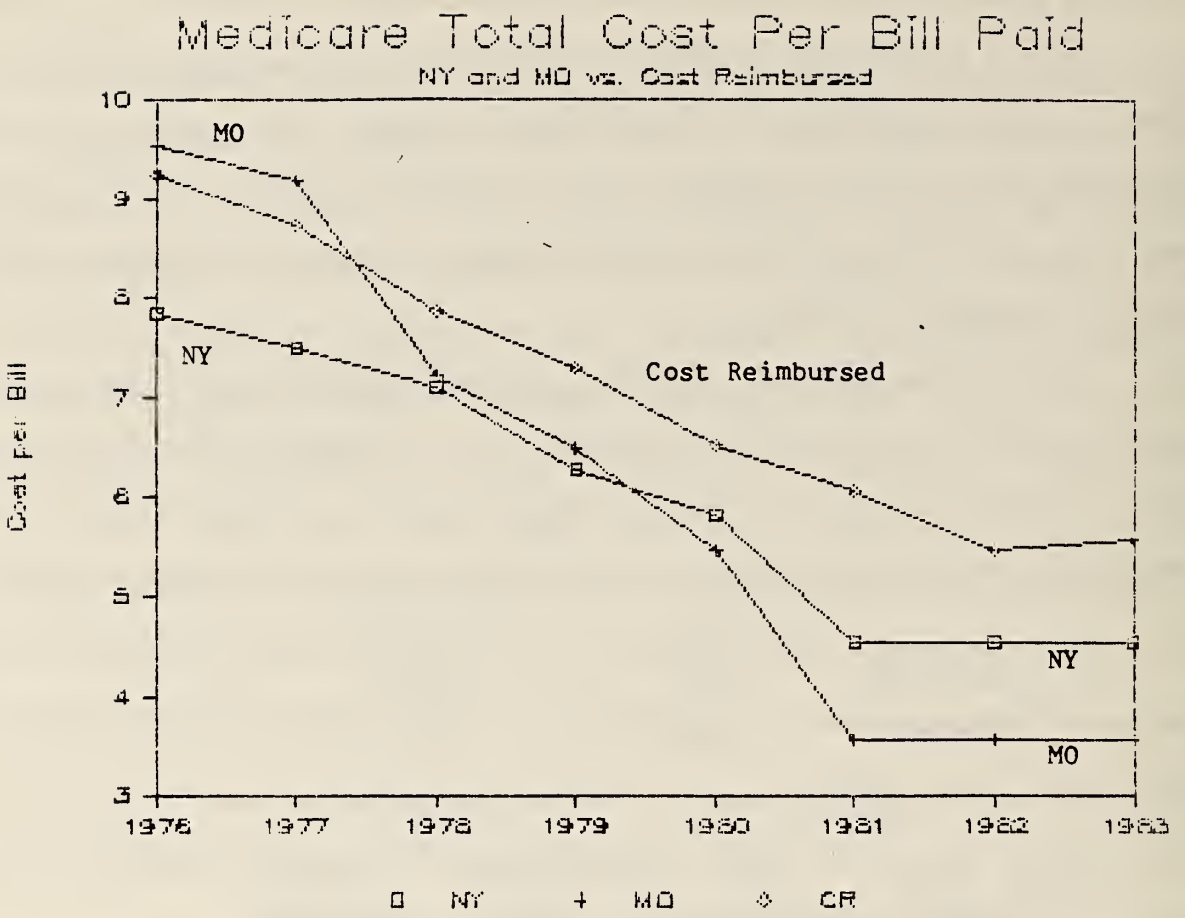
For TCPB we similarly included all implementation costs and contract modifications reported by the contractor in our computation of total costs. This included some costs for New York which actually occurred in FY80. These adjustments yielded the following values for use in our regression analysis:

	TCPB	TCPBP
New York	4.55	4.54
Missouri	4.98	3.56

These values were used in each of the three fixed price years covered by our regressions. As can be seen, TCPB and TCPBP are virtually identical for New York. For Missouri, however, TCPBP is much lower than TCPB.

Figure 2.1 illustrates our basic problem. The figure plots the cost per bill (TCPBP) paid by the government in New York and Missouri against the national average for all intermediaries for 1976 to 1983. All figures are in constant 1983 dollars. New York and Missiour points are averaged over the intermediaries in the states for the years before fixed price. During the fixed price period, both New York and Missouri have costs which were low relative to the national average. Missouri's costs under fixed price appear to be dramatically lower than the trend in its costs prior to fixed price. From the graph, it is arguable whether New York's costs under fixed price are lower than what they might have been if earlier trends had continued. Our statistical models below will try to determine if either Missouri's or New York's costs under fixed price were lower than what would have occurred in the absence of the fixed price contracts.

FIGURE 2.1


Medicare Total Cost Per Bill Paid
NY and MO vs. Cost Reimbursed
Cost per Bill
10
9
8
7
6
5
4
3
MO
NY
Cost Reimbursed
NY
MO
1976
1977
1978
1979
1980
1981
1982
1983
NY
MO
CR

2.8.5 Method of Measuring Intermediary Performance

In the Medicare program it is important not only that bills be paid, but also that they be paid on time and without error. In our analysis, we have consequently tried to take account of how the costs of a intermediary may be affected by its speed and accuracy in processing claims.

As a measure of speed of payment, we have used the intermediary's mean processing time (PTTOT) outside of transit time. This is essentially the average number of days elapsed between the receipt of a bill and its final payment. (Time which elapses while bills are undergoing final posting in Baltimore is not counted since this is outside the control of the intermediary.) It is typical for Part A intermediaries to process about 90 percent of its bills within a few days of receipt. A small percentage of bills, however, require some extra work because they have garbled, incomplete, or inconsistent information. Intermediaries attempt to expedite payment by "developing" a bill, (i.e., writing or telephoning the sender for additional information). Intermediaries have some flexibility in determining when and how they will develop a bill. Furthermore, the sophistication of prepayment edits in an intermediary's notice of program reimbursement system can affect the number of bills which require development. In our analysis we have, consequently, used the development rate (DEVRAT)--the annual percentage of bills which undergo development--as one measure of an intermediary's qualitative effort of claims processing.

In our analysis we have used the percentage of bills returned to the intermediary due to any kind of errors (BILLRET) as a measure of the accuracy of bill processing. The accuracy of an intermediary's work is measured in part by the number of bills which display errors in reporting basic information to Medicare or in determining allowable utilization. Under normal bill

processing operations, an intermediary receives from a provider a notification that the patient is beginning to receive services. The intermediary checks with the Medicare central computer in Baltimore to determine the eligibility of the individual and subsequently notifies the provider about the patient's eligibility status. When services are completed, the provider submits a bill to the intermediary which in turn pays the bill and forwards it to the Medicare central computer. Errors in the bill payment process may be detected by the Medicare computer at this point. Some of these errors may be the fault of the intermediary while other may reflect a change in the beneficiary's eligibility status due to any updating of the eligibility file that may have occurred (because the beneficiary also received services from another provider using another intermediary) in the intervening period. Our variable BILLRET measures the overall error rate which the intermediary has to contend with due to both its own fault and uncontrollable updating of central Medicare records.

Our analysis also controls for the extent of audit activity by the intermediary. This is measured with two variables. One variable for the percent of providers audited (AUDPCT) is defined as the total number of field audits performed in a year divided by the number of providers served by the intermediary. It is consequently a measure of the frequency of a full field audit in a particular year. A second variable for the percent of settled hospital cost reports (SETCRD) is defined as the percentage of hospital cost reports due for settlement which are actually settled in a particular year. This is a measure of the timeliness of cost report settlement. The measure was used by HCFA as one of the criteria for determining liquidated damages under the Part A fixed price contracts.

Measuring Other Factors

Our equations include several variables which measure other factors which are likely to affect an intermediary's costs or its level of benefit payments. Several variables are used to measure the level of wages and input prices prevailing in the intermediary's region. Clerical wages (CLRK) are measured using values reported by the Life Office Management Association (LOMA) for regional average clerical wages in the insurance industry. White collar wages are measured by using the average regional salary of senior systems analysts (SRSYANL) and the average regional salary of operations managers (OPMGR). Salaries of data entry clerks are measured in terms of their average regional wage (DTENTY). These three variables were obtained from annual surveys published in DATAMATION.

We have also included in our equations a variable (RENT) for the average cost of rented office space. The variable is derived from the annual survey of the Building Owners and Managers Association.

In summary the cost and benefits payments equations have used the following variables:

Dependent Variable

BILLPAY total annual Medicare Part A benefit payments divided by bills processed.

TCPB total intermediary administrative costs divided by total bills processed.

TCPBC total payments by the federal government to an intermediary for administrative services divided by total bills processed. This variable differs from TCPB only for fixed price intermediaries whose total payments may be greater than or less than their reported costs.

Fixed Price Variables

DMO dummy variable equal to one for Blue Cross of Kansas City and Blue Cross of St. Louis for years prior to 1982; otherwise equal to zero.

DNY dummy variable equal to one for Blue Cross intermediaries operating in New York state through 1981; otherwise equal to zero.

DMOFP dummy variable equal to one for Blue Cross of St. Louis for operations under its fixed price contract in 1981 through 1983; otherwise equal to zero.

DNYFP dummy variable equal to one for Blue Cross of New York operating under its fixed price contract from 1981 through 1983; otherwise equal to zero.

Intermediary Characteristics

AUDPCT Percent of Providers receiving a field audit. Defined as total field audits divided by total providers times 100.

BILLPRO Total bills (in thousands) processed by an intermediary per year

BILLPROSQ BILLPRO squared

BILLINV The reciprocal of BILLPRO

DEVRAT Percent of bills developed by the Intermediary

DNMODEL Dummy variable equal to one for intermediaries NOT using the Model A system; otherwise equal to zero.

MRB Percent of bills received by the Intermediary in machine readable form.

PIPPCT Percent of providers receiving Periodic Interim Payments

HHAPCT Percent of total bills received from Home Health Agencies

SNFPCT Percent of total bills received from Skilled Nursing Facilities

OUTPCT Percent of total bills received for outpatient services

OTHPCT Percent of total bills received for services other than HHA, SNF, Inpatient or Outpatient

NOTE: A variable for the percent of bills received for inpatient services is excluded from the regression to permit estimation. The intercept terms capture this effect.

SETCRD Percent of Cost Reports due for settlement that are settled in the fiscal year. (The percentage is adjusted by a correction factor reflecting the overlap of an intermediary's fiscal year with the fiscal years of its providers).

TOTPROV2 Total number of providers served by an Intermediary.

TOTPROVSQ The square of TOTPROV2.

TOTPROVINV The reciprocal of TOTPROV2

PTTOT Mean Processing time per bill. Covers the time from receipt of bill to final payment by Intermediary. (Does not cover time elapsed in transmitting final bill to HCFA). This is defined as a weighted average (weighted by bills received by type of provider) of processing times for inpatient, outpatient, SNF and HHA bills.

Regional Wage and Input Prices

RENT Mean price per square foot for rented office space as reported by the BOMA survey.

DTENTY Mean regional wage for data entry operators as reported by the Datamation survey.

CLRK Mean regional wage for clerical workers in the insurance industry as reported by LOMA.

OPMGR Mean regional wage for Operations Managers as reported by the Datamation survey.

SRSYANL Mean regional wage for Senior Systems Analysts as reported the Datamation survey.

Time Variables

YRXX Dummy variable equal to one for 19XX; otherwise equal to zero.

2.9 Results: Reduced Form Model

In this section we present the results of our econometric analysis of bill processing costs and benefit payments.[1] Our basic finding is that the Medicare program, relative to historical trends, experienced lower administrative costs in the case of the competed fixed price contract in Missouri; the program did not experience any notable savings in the case of the negotiated New York contract. The relatively weak findings for New York

[1]Tables 2.10 through 2.15 and Table 2.17 do not report the dummy variable intercept for intermediaries other than New York and Missouri. Complete regressions are reported in the appendix.

are due partly to the state's favorable cost performance prior to the fixed price contract: it was relatively more difficult for New York under fixed price to outperform its own previous history than it was for Missouri. An additional explanation is that the New York contractor was successful at winning incentive payments for good performance. This superior performance raised the price paid by the government.

Findings regarding the effect of fixed price contracts on a contractor's reported costs and on benefit payments are not clear from the reduced form model. We defer judgment on these effects until we examine the structural models reported in Section 2.10.

2.9.1 Effects of Fixed Price on Cost Incurred by the Government

As discussed earlier in this chapter and in chapter 1.0, the costs reported by fixed price intermediaries create no obligation of payment by the government. Differences between the agreed fixed price and actual cost are either a profit or a loss to the contractor. Consequently, one way to measure the outcome of the fixed price experiments is to examine how they affected the costs which the government incurred in securing the services of a contractor.

To examine this issue, we estimated regressions using total cost per bill paid (TCPBP) by the government. Table 2.10 presents regression equations which have been estimated with the fixed effects method. The table compares four specifications for the influence of claims volume on the regression, namely a linear relation, a quadratic, an inverse and a logarithmic. The equations agree substantially on the relation of many of the variables in the model to total cost paid by the government.

The most interesting portion of the regressions for this evaluation is the effect of fixed price contracts on TCPBP. This effect is seen by

Table 2.10 Reduced Form Regression, Total Cost per Bill Paid (TCPBP) by Government for Medicare Part A Intermediaries, 1976-1983

Equation	(a)	(b)	(c)	(d)
New York Before Fixed Price = 1 (DNY)	0.349620	0.272192	0.291010	0.129572
New York After Fixed Price = 1 (DNYFP)	-0.136306	-0.397053	-0.054092+	-1.747732**
Missouri Before Fixed Price = 1 (DMO)	0.166300	0.064177	-0.077377	-0.405543
Missouri After Fixed Price = 1 (DMOFP)	-1.249799*	-1.497661*	-1.441569**	-2.099186**
Bills Processed (000) (BILLPRO)	-0.000255227	0.0002691724		
Bills Processed Squared (0000) (BILLSQ)		$-1.11948e^{-09}$		
Inverse of Bills Processed (000000) (BILLINV)			-0.00928994	
Logarithm of Bills Processed (LNBILL)				0.349146**
Total Percent of Bills Returned (BILLRET)	0.072185**	0.070434*	0.071547*	0.078397**
Development Rate (DEVRAT)	0.034532*	0.035125*	0.037029*	0.038354*
Percent of Providers Audited (AUDPCT)	0.00486922**	0.004868583**	0.004788048**	0.004846655**
Average Intermediary Processing Time (PTTOT)	0.010056	0.010366	0.011504+	0.012675*
Percent of Bills Received in Machine Machine Readable Form (MRB)	-0.0045822+	-0.00519701+	-0.00507638+	-0.00645031*
Percent of Providers on PIP (PIPPCT)	0.001911792	0.001350187	0.0008177047	0.0002008625
Percent of Settled Hospital Cost Reports/Prior FY (SETCRD)	0.000122056	-0.000573242	-0.000189901	-0.000173345
Rent per Square Foot (RENT)	0.0000637054	0.0001267556	0.0006226728	0.0002078393
Data Entry Salary (DTENTY)	0.186581**	0.188621**	0.182929**	0.156180**
Operations Manager Salary (000) (OPMGR)	-0.049632**	-0.049030**	-0.049042**	-0.046050**
Senior Systems Analyst Salary (000) (SRSYANL)	-0.00194758	-0.00101969	-0.0018875	-0.00317219
Clerical Wage per Week (CLRK)	0.034893**	0.034115**	0.036480**	0.022077**
Percent of Claims Received, Outpatient (OUTPCT)	-0.041890**	-0.042568**	-0.044741**	-0.067608**
Percent of Claims Received, SNF (SNFPCT)	-0.024697	-0.020806	-0.020157	-0.023459
Percent of Claims Received, HHA (HHAPCT)	-0.073847**	-0.076474**	-0.078317**	-0.097108**
Percent of Claims Received, Other (OTHPCT)	-0.079797**	-0.073419**	-0.072561**	-0.072440**
1977 (YR77)	-0.044327	-0.054372	-0.050197	-0.00542396
1978 (YR78)	-0.098648	-0.118483	-0.113373	-0.071737
1979 (YR79)	0.014681	-0.0028964	-0.000272847	0.086262
1980 (YR80)	0.058828	0.032113	0.235482	0.079362
1981 (YR81)	0.329684*	0.284185+	0.306067*	0.288391+
1982 (YR82)	0.247429	0.183461	0.216263	0.192531
1983 (YR83)	0.0726669**	0.662914**	0.667114**	0.688848**
Not on Model A System (NOMODEL)	0.233109	0.195925	0.223873	0.170696
$\bar{R}^2$	.9904	.9905	.9904	.9906
HO: DNY - DNYFP = 0				
$F_{1,433}$	0.5105	0.9106	10.7166**	17.0433**
HO: DMO - DMOFP = 0				
$F_{1,433}$	12.7450**	13.8678**	14.9679**	18.3660**

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically signlficant, 90% level

comparing the relative size of the regression coefficients for the periods before and after the introduction of the fixed price contracts. Since each of these coefficients is estimated to fall within a certain range, it is important to test to see if apparent differences in the coefficients are in fact statistically significant (i.e. larger than chance would dictate). For each of the fixed price sites we tested the hypothesis:

HO: Differences between the coefficients are equal to zero:

$$BNY - BNYFP = 0$$

$$BMO - BMOFP = 0$$

The table indicates the computed F statistic for each of these tests.

Our findings for New York and Missouri are quite different. For New York, we can always accept the hypothesis (HO) that the difference between the coefficients is zero in only two of four regressions. Results here are very sensitive to the functional form of the regression. Furthermore, in the regressions (c and d) where New York shows a significant savings, the sign on the coefficient for claims volume is "wrong", that is, diseconomies of scale are indicated.

For Missouri, results are much clearer and they strongly support the inference that the government spent less under the fixed price contract than it would have spent under the previous cost reimbursed contracts. In Missouri, we decisively reject the hypothesis (HO) that there is no difference between the coefficients. We can also decisively reject any hypothesis that the government may have spent more under fixed price than it would have spent under cost reimbursement. Finally, we accept the hypothesis that the government may have saved as much as one dollar per claim. In fact, we can accept the hypothesis that the government saved money equal to the difference in the reported regression coefficients. In the case of the linear regression, for

example, this difference N0.16 - (-1.25)0 equals $1.41 per bill. The regression coefficients for the four equations find savings that range from $1.36 to $1.55 per bill.

The findings of our regressions appear to be consistent with our findings in the previous chapter that payments to the New York contractor are very near the contractors own reported costs while payments to Missouri are below reported costs. From the government's point of view, Missouri offered a significant savings on Medicare administrative costs while New York offered no appreciable change over what might have been expected from historical trends under traditional contracting.

In the next section we explore cost variation from the viewpoint of the contractor to see if contractor costs changed significantly after the commencement of the fixed price contracts.

2.9.2 Effects of Fixed Price on Cost Reported by Intermediaries

In the previous section we considered how costs incurred by the government changed as a result of fixed price contracting. In this section we discuss how costs reported by Intermediaries were affected by fixed price contracts. As noted earlier in this chapter and discussed more fully in Chapter 1, the fixed price contractors were required to report their incurred costs using the standard accounting rules which apply to all Medicare intermediaries. The government, however, was obligated to pay only the agreed fixed price (adjusted for liquidated damages, incentive payments, changes in the scope of work and some pass through items such as postage increases.) Consequently, in this section we explore the effects of fixed price contracts on the level of costs as reported by the two contractors. At

issue is whether the fixed price contractors where able to reduce their own costs commensurate with the savings realized by the government.

Table 2.11 reports regressions where total cost per bill (TCPB) reported by the contractor is the dependent variable. Once again, we estimated the regressions in a linear, a quadratic, an inverse and a logarithmic form. As in the previous section, differences between the regression coefficients for dummy variables denoting the periods before and after the fixed price contracts were tested to determine statistical significance.

Findings for New York continue to be ambiguous. Equations (a) and (b) find no statistically significant differences in TCPB before versus after fixed price; equations (c) and (d) find strongly significant differences. These findings are again coupled with implausible findings regarding the effect of scale. Two equations (a,c) find no relation between reported costs and bill volume; equation (b) finds economies of scale. (The quadratic function declines with bill volume over the range of volume that we observe in the data.) These findings do not show conclusively that New York was able to achieve reductions in its reported costs relative to what costs would have been in the absence of the experiments. In Missouri, results are very strong. There are no statistically significant differences between the coefficients DMO and DMOFP in any of the four equations. There is thus no evidence in these equations that St. Louis's reported costs were lower under fixed price than would have been the combined costs of both intermediaries if they had remained in operation. Again, we will withhold final judgment on this point until we examine the structural equations in the next section.

Table 2.11 Reduced Form Regressions, Total Cost per Bill (TCPB) Reported by Medicare Part A Intermediaries, 1976-1983

Equation	(a)	(b)	(c)	(d)
New York Before Fixed Price = 1 (DNY)	0.133018	-0.028698	0.101558	-0.197356
New York After Fixed Price = 1 (DNYFP)	-0.879151	-1.423747	-1.326508	-2.805638**
Missouri Before Fixed Price = 1 (DMO)	0.014698	-0.198596	0.009547591	-0.955169
Missouri After Fixed Price = 1 (DMOFP)	-0.049475	-0.567161	-0.098373	-1.415433
Bills Processed (000) (BILLPRO)	-0.000157399	0.0009378613		
Bills Processed Squared (0000) (BILLSQ)		$-2.33814e^{-09}$+		
Inverse of Bills Processed (000000) (BILLINV)			0.005462342	
Logarithm of Bills Processed (LNBILL)				0.626435**
Total Percent of Bills Returned (BILLRET)	0.104273**	0.100617**	0.104083**	0.115972**
Development Rate (DEVRAT)	0.041838*	0.043077	0.042351*	0.046759*
Percent of Providers Audited (AUDPCT)	0.006515126**	0.006514005**	0.006599547**	0.006438898**
Average Intermediary Processing Time (PTTOT)	0.012758	0.013406	0.011783	0.017579*
Percent of Bills Received in Machine Machine Readable Form (MRB)	0.002991969	0.001707864	0.002568126	0.0003385028
Percent of Providers on PIP (PIPPCT)	0.0006500807	-0.000522888	0.000484858	-0.00162938
Percent of Settled Hospital Cost Reports/Prior FY (SETCRD)	-0.000798836	-0.000663637	-0.000636128	-0.00162938
Rent per Square Foot (RENT)	-0.0000383369	0.0000933498	0.0000219746	0.0002051005
Data Entry Salary (DTENTY)	0.252318**	0.256580**	0.248185**	0.203913*
Operations Manager Salary (000) (OPMGR)	-0.057832**	-0.056574**	-0.056712*	-0.052838*
Senior Systems Analyst Salary (000) (SRSYANL)	-0.026750	-0.024812	-0.025834	-0.029878
Clerical Wage per Week (CLRK)	0.058786**	0.057161**	0.057695**	0.035945**
Percent of Claims Received, Outpatient (OUTPCT)	-0.048851**	-0.050267**	-0.046850*	-0.095311**
Percent of Claims Received, SNF (SNFPCT)	0.030953	0.039079	0.033345	0.028255
Percent of Claims Received, HHA (HHAPCT)	-0.089247**	-0.094735**	-0.089098**	-0.128559**
Percent of Claims Received, Other (OTHPCT)	-0.149290**	-0.135968**	-0.152455**	-0.137154
1977 (YR77)	-0.587121**	-0.608100**	-0.588721**	-0.503625
1978 (YR78)	-1.279527**	-1.320954**	-1.282611**	-1.219767
1979 (YR79)	-1.767526**	-1.804237**	-1.771303**	-1.626809
1980 (YR80)	-2.278951**	-2.334746**	-2.282611**	-2.221237
1981 (YR81)	-2.439072**	-2.534102**	-2.450055**	-2.488852
1982 (YR82)	-2.851154**	-2.984759**	-2.872915**	-2.910469
1983 (YR83)	-2.625450**	-2.758610**	-2.660138**	-2.625176**
Not on Model A System (NOMODEL)	0.293896	0.216233	0.285944	0.194996
R^2	.9898	.9898	.9898	.9901
HO: DNY - DNYFP = 0 $F_{1,433}$	1.1918	2.1368	6.5128**	18.0024**
HO: DMO - DMOFP = 0	0.0141	0.4171	0.0407	0.7422

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically significant, 90% level

2.9.3 Effects of Fixed Price on Benefits Paid by Intermediaries

We have also explored the effects of fixed price contracts on Medicare Part A benefit payments. We find no evidence in the reduced form equations that fixed price contracts resulted in either higher or lower levels of benefit payments than would have been expected in the absence of such contracts.

Table 2.12 reports the results of regression equations where benefit payments per bill (BILLPAY) is the dependent variable. The equations are estimated in a linear, a quadratic, inverse and logarithmic functional forms to test the sensitivity of results to the way in which we treat the volume of bills processed. One again, our interest is in examining the differences between the coefficients for the dummy variables which denote the periods before and after the institution of fixed price contracts in New York and Missouri. Specifically we test the hypothesis that the difference between the coefficients is zero at each site.

That is: H_0: $BNY - BNYFP = 0$; $BMO - BMOFP = 0$

In Missouri, differences between the coefficients are too small to be statistically significant. We can always accept the hypothesis that there was no significant difference in payments before and after the fixed price contracts.

In New York, three of the equations show no statistically significant differences in bill payments while one (d) does show a statistically significant decline in payments. Since the result is again sensitive to the functional form, it seems unlikely that a real decline in payments occurred. We will examine this findings further in Section 2.10.

Table 2.12 Reduced Form Regressions, Total Benefits Paid per Bill (BILLPAY) Reported by Medicare Part A Intermediaries, 1976-1983

Equation	(a)	(b)	(c)	(d)
New York Before Fixed Price = 1 (DNY)	-11.668666	-17.547387	-8.012994	-24.639710
New York After Fixed Price = 1 (DNYFP)	-104.024	-123.821	-53.289973	-125.020*
Missouri Before Fixed Price = 1 (DMO)	307.538**	299.784**	306.962**	257.120**
Missouri After Fixed Price = 1 (DMOFP)	303.180**	284.361**	307.371**	239.494**
Bills Processed (000) (BILLPRO)	0.018852	0.058667		
Bills Processed Squared (0000) (BILLSQ)		$-8.49966e^{-08}$		
Inverse of Bills Processed (000000) (BILLINV)			-0.922893	
Logarithm of Bills Processed (LNBILL)				35.929113**
Total Percent of Bills Returned (BILLRET)	-0.815021	-0.947949	-0.797131	-0.092762
Development Rate (DEVRAT)	-4.886831**	-4.841801**	-4.923598**	-4.784175**
Percent of Providers Audited (AUDPCT)	0.090074	0.090033	0.076736	0.082370
Average Intermediary Processing Time (PTTOT)	-0.702907	-0.679379	-0.541212	-0.415124
Percent of Bills Received in Machine Machine Readable Form (MRB)	0.229065	0.182385	0.282689	0.141656
Percent of Providers on PIP (PIPPCT)	-1.238530*	-1.281170*	-1.230970	-1.295954**
Percent of Settled Hospital Cost Reports/Prior FY (SETCRD)	-0.056110	-0.051195	-0.080508	-0.079410
Rent per Square Foot (RENT)	0.113230**	0.118017**	0.110856**	0.125785**
Data Entry Salary (DTENTY)	-4.577694	-4.422791	-4.037489	-6.784507
Operations Manager Salary (000) (OPMGR)	2.293917	2.339663	2.141630	2.447338
Senior Systems Analyst Salary (000) (SRSYANL)	8.142723**	8.213173**	8.011865**	7.877062**
Clerical Wage per Week (CLRK)	4.123325**	4.064277**	4.303606**	2.827539**
Percent of Claims Received, Outpatient (OUTPCT)	-5.382434**	-5.433921**	-5.712320**	-8.076559**
Percent of Claims Received, SNF (SNFPCT)	-5.150053+	-4.854639	-5.426811+	-5.765438+
Percent of Claims Received, HHA (HHAPCT)	-12.083970**	-12.283463**	-12.171550**	-14.113886**
Percent of Claims Received, Other (OTHPCT)	-17.784589**	-17.300316**	-17.222418**	-17.187430**
1977 (YR77)	25.409214**	24.646568**	25.552448**	30.656250**
1978 (YR78)	33.701705**	32.195756**	33.927068**	38.193933**
1979 (YR79)	58.608356**	57.273796**	58.930105**	67.818912**
1980 (YR80)	91.223048**	89.194761**	91.974005**	96.469440**
1981 (YR81)	106.214**	102.759**	107.444**	105.614**
1982 (YR82)	180.677**	175.820**	183.344**	180.910**
1983 (YR83)	112.993**	108.152**	117.099**	119.329**
Not on Model A System (NOMODEL)	-26.657201	-29.480428	-25.650567	-31.116126
R^2	.9935	.9935	.9935	.9936
H0: DNY - DNYFP $F_{1,433}$	1.4450	1.7968	0.9535	3.8170*
H0: DMO - DMOFP	0.0095	0.1058	0.0001	0.1558

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically significant, 90% level

Other Effects on Cost

In the next section we will discuss in more detail how the other variables in our model interact to affect claims processing costs. Before we move on, however, we should note that the reduced form equations do offer some useful insights.

The variables for bills returned (BILLRET), the development rate (DEVRAT) and the percent of providers who are field audited (AUDPCT), are positive in sign and statistically significant in all of our cost equations. This indicates that intermediaries incur higher costs when they have more claim errors, when they develop claims more thoroughly, and when they conduct more filed audits.

We also find that the mix of bills has a significant effect on costs. We find that costs tend to decline when the inpatient bill load falls relative to bills for home health (HHAPCT), outpatient services (OUTPCT), and other miscellaneous services (OTHPCT). The variable for displacements of inpatient bills with SNF bills seems to have no significant effect.

Our reduced form equations do contain some puzzles. Evidence for economies of scale is quite weak and inconsistent as shown by the frequent statistical insignificance and perverse signs of the coefficients for bill volume. Variables for the percentage of machine readable bills (MRB), mean processing time (PTTOT), percentage of providers on PIP (PIPPCT), and the percentage of cost reports which are settled (SETCRD) are only sometimes statistically significant (especially for MRB in the equation which uses TCPBP as the dependent variable). We will see in the next section if some of these puzzling results can be explained by a structural model.

2.10 Structural Model Estimation

In the previous section we discussed the results of a simple (reduced form) model which portrayed the effects of fixed price contracts on cost per bill and benefit payments per bill. Our findings in that section found that the Missouri experiment had produced lower costs to the government. Other results indicated that the New York experiment had not reduced cost to the government and that neither experiment had affected levels of benefit payments.

In this section we offer a check on the previous results by estimating a structural model which takes into account some of the complexities of a Medicare intermediary's work. Our findings in this section show that the competitive fixed price experiment in Missouri achieved significant savings to the government compared to what it would have paid under a traditional fixed price contract. No consistent significant effects are found in New York.

We undertake this structural modeling exercise for two reasons. First, the preceding reduced form model offered some rather puzzling results about the presence of economies of scale, and the importance of variables which describe the speed, accuracy, and computerization of an operation. Since these issues are of obvious interest to the administration of the Medicare program, we feel that another attempt should be made to determine reason for undertaking additional modeling is that we want to be sure that our a particular modeling approach. Agreement between the reduced form regressions and the more theoretically formal model should give us a high degree of confidence about our findings.

Our structural model consists of the following three equations.

Processing time = f(fixed price, machine readable bills, Model A system, development rate, bills returned)

Cost per bill = f(fixed price, bills processed, field audits, processing time, PIP percentage, wage level, bill mix)

Benefits paid per bill = f(fixed price, cost per bill, cost report settlements, bill mix, time)

This model is a mix of practical and theoretical considerations. Consider first the equation for processing time. In estimating the reduced form equations in the previous section, we noticed significant partial correlations between processing time (PTTOT), the percentage of machine readable bills (MRB), use of a system other than the model A system (DNMODEL), the development rate (DEVRAT), and the percentage of bills that were returned to the intermediary due to errors (BILLRET). This lead us to believe that multicollinearity might be a problem in the reduced form equation. That is, so many variables were correlated to each other that their separate effects might not be discerned accurately.

One way around this problem of multicollinearity is to show how characteristics of the production process may affect each other. One plausible argument is that many aspects of the production process culminate in an effect on the speed of processing. For example, a high degree of machine readable bills would speed up production, while more effort on bill development (or, alternately, receiving more incomplete bills from providers) would slow down production. The choice of whether or not to use the Model A processing system--for whatever reason--may also have an effect on the speed of processing. Finally, a system with a high rate of processing errors could initially speed up its production; however, as errors are caught in Baltimore and bills are returned, the intermediary's work on current bills would slow down due to the need to correct errors on old bills. We do not include in this equation any terms to measure the mix of bills because we wish to lessen some possible multicollinearity with the other variables already in the equation. Bill mix is considered in the other equations.

The equation for cost per bill is a simplification of the reduced form model of the previous section. Here we allow the variable for processing speed to summarize all of the interactions which are captured in the previous equation. (This means that we must use Two Stage Least Squares to estimate the model so that the predicted value of processing time, obtained from the previous equation, is used in estimating the cost equation.) Some variables which are likely to affect cost, but which have little significant partial correlation with the speed of processing, are also included directly in the cost equation. These variables include bill volume (BILLPRO), the percent of providers receiving field audits (AUDPCT), and the percent of providers who are paid under the PIP program (PIPPCT). We have also simplified this equation (again, to lessen possible multicollinearity) by using only the clerical wage variable (CLRK) and the salary of systems analysts (SRSYANL) to be a proxies for all regional input prices. Bill mix is explicitly included in this equation since it may have an effect on costs independent of any indirect effects that occur through processing speed.

As in our previous modeling, the exact definition of the cost per bill variable allows two possibilities. If we estimate the model using total cost per bill (TCPB) reported by the intermediary, we will be measuring the effect of fixed price on the costs of the intermediary; if total cost per bill paid (TCPBP) by the government is used, we will obtain an estimate of the effect of the fixed price experiment on the government's expenditures. Since both variables are of interest, we present below estimates that apply to each definition.

Our third structural equation considers explicitly the effect which an intermediary's administrative cost may have on benefit payments. (Again, we use a predicted value of cost per bill obtained from the previous equation.

The intermediary's reported costs (TCPB) seem to be more appropriate here since this variable is supposed to measure actual resources used. We also estimated the model using TCPBP, however, to see how sensitive the model might be to this alternative.) We also consider explicitly how bill mix affects payments; bills for services by HHAs or outpatient departments, for example, are clearly likely to be less expensive per bill than are inpatient claims.

Our benefit payment equation includes explicitly variables for time. We do this because medical costs were rising more rapidly than general inflation. Furthermore, since we do not have good data on the medical costs of providers who elect particular intermediaries, time variables serve as proxies for these inflationary trends.

Note that we excluded time variables from the other two equations. We did this because many of the variables themselves have very pronounced time trends (e.g., machine readable bills) which we believe is due to real technological change among the intermediaries. Including time variables in these equations would probably introduce multicollinearity and obscure the effects of this technological change.

Structural Model Results

Table 2.13 presents the results of estimating the final equation of the structural model. The equation shows the effect of the various production characteristics on processing time (PTTOT).[1] Table 2.14 presents the cost equation using total reported intermediary cost per bill (TCPB) as the dependent variable. Once again, we estimate this equation with bill volume appearing in a linear, quadratic, inverse and logarithmic form in order to

[1]There is only one version of this equation to report because it does not contain any endogenous variables from the other equations in the model.

Table 2.13 Structural Regression: Intermediary Processing Time (PTTOT), Medicare Part A Intermediaries 1976-1983 (t-statistics in parentheses)

Percent of Bills Received in Machine Readable Form (MRB)	-0.047534** (-2.8628)
Not on Model A System = 1 (DNMODEL)	-5.261267** (-4.8829)
Development Rate (DEVRAT)	0.288919** (2.9075)
Total Percent of Bills Returned (BILLRET)	1.124831** (5.6736)
New York Before Fixed Price = 1 (DNY)	14.568630** (14.0889)
New York After Fixed Price = 1 (DNYFP)	10.027927** (3.7730)
Missouri Before Fixed Price = 1 (DMO)	7.532493** (4.7493)
Missouri After Fixed Price = 1 (DMOFP)	12.903394** (5.4057)
R^2	.8875
HO: DNY - DNYFP = 0 $F_{1,454}$	3.0704+
HO: DMO - DMOFP = 0 $F_{1,447}$	3.9540*

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically significant, 90% level

Table 2.14 Structural Regression: Total Cost per Bill (TCPB) for Medicare Part A Intermediaries 1976-1983 (t-statistics in parentheses)

Equation	(a)	(b)	(c)	(d)
New York Before Fixed Price = 1 (DNY)	0.315118 (0.4356)	0.613711 (0.8518)	0.131100 (0.1787)	-0.261729 (-0.3574)
New York After Fixed Price = 1 (DNYFP)	0.523867 (0.3754)	1.418378 (1.0099)	-3.242501** (-3.2358)	-5.076389** (-4.6303)
Missouri Before Fixed Price = 1 (DMO)	-1.019268 (-1.1784)	-0.371790 (-0.4243)	-1.391842 (-1.5922)	-2.772504** (-2.9418)
Missouri After Fixed Price = 1 (DMOFP)	-1.731746 (-1.6943)	-0.506521 (-0.4720)	-2.543603 (-2.4998)	-4.159205** (-3.7974)
Bills Processed (000) (BILLPRO)	-0.00113083** (-3.8355)	-0.00338995** (-4.6553)		
Bills Processed Squared (0000) (BILLSQ)		$5.24770e^{-09}$ (3.3853)		
Inverse of Bills Processed (000000) (BILLINV)			0.007475062 (0.4212)	
Logarithm of Bills Processed (LNBILL)				0.675223** (3.5415)
Percent of Providers Audited (AUDPCT)	0.010439** (4.5751)	0.010434** (4.6257)	0.010243** (4.3960)	0.010821** (4.7172)
Average Intermediary Processing Time (PTTOT)	0.010439** (4.4864)	0.040817** (3.9151)	0.048638** (4.4370)	0.055568** (5.2859)
Percent of Providers on PIP (PIPPCT)	0.004483581 (0.6149)	0.008210249 (1.1261)	0.001681481 (0.2272)	-0.00189756 (-0.2592)
Senior Systems Analyst Salary (000) (SRSYANL)	-0.013381 (-0.7809)	-0.012068 (-0.7123)	-0.022217 (-1.2876)	-0.033867** (-1.9562)
Clerical Wage per Week (CLRK)	0.137490** (16.6421)	0.128559** (14.9794)	0.144722** (17.0406)	0.126961** (13.2260)
Percent of Claims Received, Outpatient (OUTPCT)	-0.236243** (-14.2223)	-0.210907** (-11.6876)	-0.240987** (-14.4804)	-0.314454** (-13.1866)
Percent of Claims Received, SNF (SNFPCT)	0.116303** (2.4924)	0.095663* (2.0560)	0.142147** (3.0297)	0.129310** (2.7861)
Percent of Claims Received, HHA (HHAPCT)	-0.252300** (-12.7056)	-0.222601** (-10.3532)	-0.276417** (-14.2107)	-0.325876** (-14.1378)
Percent of Claims Received, Other (OTHPCT)	-0.389370** (-11.1333)	-0.391197** (-11.3140)	-0.414059** (-11.0388)	-0.409817** (-11.8115)
R^2	.9856	.9859	.9851	.9855
HO: DNY - DNYFP = 0 $F_{1,447}$	0.0339	0.5026	27.0693**	43.7152**
HO: DMO - DMOFP = 0 $F_{1,447}$	1.2644	0.0431	3.3067+	4.8897*

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically significant, 90% level

test the equation's sensitivity. Table 2.15 uses total cost per bill paid (TCPBP) by the government as an alternative dependent variable to determine the effect of the experiments on the government's costs. There are also variations on the equations for different specifications of bill volume. Table 2.16 presents the final equation of our model showing the effects of the fixed price experiments on bill payments.[1]

Processing Time

In regard to the effects of the fixed price experiments, Table 2.13 shows that processing time fell in New York by about 4.5 days after the introduction of the fixed price contract. In Missouri, processing time rose by a little over 5.5 days. Both of these results are averages over the period of 1981 through 1983. The rise in processing time in Missouri reflects mainly the serious slow down in work at the start of the contract; the improved speed in New York is, apparently, the result of implementing a new system.[1] Since these results coincide reasonably well with the actual experience in these areas as shown in Table 2.16, we have reason to believe that our structural model is correctly capturing the production process.

We also see in our model in the equations for TCPB and TCPBP in Tables 2.14 and 2.15, that higher processing time (i.e., slower processing) is associated with higher costs per bill.

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[1]Technically, there are eight possible versions of this equation because it can be estimated using either the predicted value of TCPB or TCPBP from either of the four variants of the cost equations. However, when we estimated the eight versions we obtained identical results because there was very little difference in the various predicted values.

[1]Coefficients are significantly different from zero only for New York prior to fixed price (DNY) and Missouri prior to fixed price (DMO). If we treat the other two coefficients DNYFP and DNYMO as zero and subtract this zero from the other two coefficients, processing time in New York fell by almost four (3.84 - 0) days while processing time rose in Missouri by three

Table 2.15 Structural Regression: Total Cost per Bill Paid (TCPBP) for Medicare Part A Intermediaries 1976-1983 (t-statistics in parentheses)

Equation	(a)	(b)	(c)	(d)
New York Before Fixed Price = 1 (DNY)	0.507474 (1.1819)	0.402488 (0.9334	0.499959 (1.1668)	0.315962 (0.7345)
New York After Fixed Price = 1 (DNYFP)	0.232337 (0.2805)	-0.082173 (-0.0978)	-0.072138 (-0.1233)	-0.817648 (-1.2695)
Missouri Before Fixed Price = 1 (DMO)	1.380070** (2.6880)	1.152417* (2.1977)	1.336922** (2.6183)	0.740738 (1.3379)
Missouri After Fixed Price = 1 (DMOFP)	-0.221671** (-0.3654)	-0.652459 (-1.0158)	-0.305431 (-0.5139)	-0.990659 (-1.5396)
Bills Processed (000) (BILLPRO)	-0.0000743963 (-0.4251)	0.0007199085+ (1.6518)		
Bills Processed Squared (0000) (BILLSQ)		$-1.84509e^{-09}$ (-1.9888)		
Inverse of Bills Processed (000000) (BILLINV)			-0.00588059 (-0.5673)	
Logarithm of Bills Processed (LNBILL)				0.304805** (2.7213)
Percent of Providers Audited (AUDPCT)	0.005822039** (4.2971)	0.005822028** (4.3127)	0.005719084** (4.2023)	0.006107841** (4.5325)
Average Intermediary Processing Time (PTTOT)	0.010415* (1.6870)	0.012470+ (1.9985)	0.011635+ (1.8172)	0.013180* (2.1342)
Percent of Providers on PIP (PIPPCT)	0.001506745 (0.3481)	0.0001964507 (0.0450)	0.001054266 (0.2439)	-0.000171941 (-0.0400)
Senior Systems Analyst Salary (000) (SRSYANL)	0.029262** (2.8770)	0.028801** (2.8401)	0.028463 (2.8242)	0.023521* (2.3127)
Clerical Wage per Week (CLRK)	0.021850** (4.4557)	0.024991** (4.8652)	0.023242** (4.6853)	0.013894** (2.4638)
Percent of Claims Received, Outpatient (OUTPCT)	-0.010099 (-1.0242)	-0.019007+ (-1.7599)	-0.012989 (-1.2887)	-0.039245** (-2.8114)
Percent of Claims Received, SNF (SNFPCT)	-0.00647702 (-0.2338)	0.0007799505 (0.0280)	-0.00418949 (-0.1529)	-0.010837 (-0.3975)
Percent of Claims Received, HHA (HHAPCT)	-0.046743* (-4.1884)	-0.059811** (-4.6479)	-0.052496** (-4.6206)	-0.072584** (-5.3603)
Percent of Claims Received, Other (OTHPCT)	-0.046743** (-2.2516)	-0.046100* (-2.2277)	-0.043685* (-1.9939)	-0.048569** (-2.3828)
R^2	.9912	.9913	.9912	.9913
HO: DNY - DNYFP = 0				
DF	1,448	1,447	1,448	1,448
F	0.1670	0.5090	2.2817	7.0219**
HO: DMO - DMOFP = 0				
DF	1,448	1,447	1,448	1,448
F	18.1363**	21.5781**	19.7078**	22.0868**

** statistically significant, 99% level

* statistically significant, 95% level

+ statistically significant, 90% level

Table 2.16: Mean Processing Time, Utilization Errors, and Percent of Providers Receiving Field Audits, New York and Missouri compared to Cost Reimbursed Intermediaries (CRI) 1976-1983

	Mean Processing Time			Utilization Errors			Percent Field Audits		
Fiscal Year	NY	MO	CRI	NY	MO	CRI	NY	MO	CRI
1976	12.0	8.1	10.5	2.2%	2.2%	2.1%	80%	90%	60%
1977	13.8	9.7	10.2	2.1	2.3	2.0	97	77	65
1978	13.1	9.4	10.2	2.7	2.6	2.1	74	54	53
1979	10.8	8.7	10.1	2.6	2.7	2.0	85	51	54
1980	15.6	8.5	10.0	3.1	2.1	1.9	86	60	51
1981	8.3	28.0	9.3	2.4	2.5	1.8	84	39	46
1982	6.7	12.0	8.1	2.1	3.0	1.8	86	51	42
1983	7.1	8.0	6.8	1.3	2.0	1.5	90	43	79

Several other effects on processing time are also of interest. The equation in Table 2.13 shows, as expected, that mean processing time tends to fall when more bills are received in machine readable form. In our model a one percentage point increase in machine readable bills results in a decrease of about half an hour in mean processing time (i.e., 0.06 of a day). Increases in the development rate (DEVRAT) and the bill return rate (BILLRET) both increase an intermediary's processing time. A one percentage point increase in the percent of bills developed increases processing time by two hours (0.27 of a day); a one percentage point increase in the percent of bills returned increases processing time by slightly more than one full day. The thoroughness of development and errors in processing clearly have an important effect on processing time. Each of these results is statistically significant at the 99 percent confidence level.

We also find that processing time is quicker for those intermediaries who do not use the Model A system. In our model, intermediaries who are not on Model A have an average processing time that is almost five days faster than those who use the system. This finding does not necessarily mean that the Model A system would perform slower than other systems in benchmark tests. The interpretation, rather, is that intermediaries who do not use Model A, tend to be speedy processors. This may be due to (i) inherent limitations of the Model A system, or (ii) a favorable mix of bills which allows rapid processing with other types of systems, or (iii) the intermediary has a strong in-house computer capability which allows it to maintain a system more effectively than average maintenance on the Model A system. Our model is not sufficiently detailed to allow us to differentiate among these possible

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and one quarter (-3.26 - 0) days.

interpretations. A more detailed study on the characteristics of the Model A system and on why some intermediaries do not adopt it would be required to explain our finding.

Cost per Bill

Our structural model basically agrees with our earlier analysis concerning the effect of fixed price contracts on cost per bill.

When we examine the equations for cost per bill paid by the government (TCPBP) in Table 2.15, we find that in Missouri the government saved from $1.60 to $1.80 per bill compared to what it would have spent in the absence of the fixed price contract.[1] Results here are consistent in sign, magnitude of the coefficients, and statistical significance.

In New York, results indicate that government payments under fixed price did not differ appreciably from what they would have been in the absence of the fixed price contract. Only one equation, that which uses the log of bill volume, indicates that costs under fixed price were lower than under the previous contracts. The three other equations, however, find small effects that are not different from zero at the 95 percent level of confidence. These results, considered with the equally weak results in the reduced form equations previously reported in Table 2.10, make a strong case that the fixed price experiment did not lower the government's costs for Part A intermediary services in New York relative to what they would have been in the absence of the experiment.

When we examine costs per bill reported by the contractors (TCPB) in Table 2.14, results remain sensitive to the way in which the variable for bill

[1]For example, in equation (a) the difference DMO-DMOFP is $1.39-(-.22) = $1.60. This is the savings to the government for the Missouri experiment.

volume is defined. In two of the equations (a) and (b), New York has higher reported costs under fixed price than it would have had under a continuation of cost reimbursement. However, in the equation which uses the inverse of bill volume (BILLINV) or the log of volume (LNBILL) this result is strongly reversed. This inconsistent pattern for New York is similar to what we found in the reduced form equation in Table 2.10. These inconsistent results indicate that reported contractor costs were probably not significantly affected by the negotiated fixed price contract. Since we have no strong theoretical reason to prefer one form of the bill volume variable to another, we think it is safest to conclude that reported costs in New York under fixed price were not significantly different from what would have occurred in the absence of a fixed price contract.

In Missouri, results are also sensitive to equation specification although they generally support the argument that costs in Missouri were lower under fixed price as they would have been under cost reimbursement. Differences between the coefficients DMO and DMOFP are negative in sign in all of the structural equations and in all four of the reduced form equations. These differences, however, are statistically significant only in equations (c) and (d) in Table 2.14. Again, we must conclude that reported costs in Missouri were no different under fixed price than they would have been under a cost contract.[1]

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[1]To determine the effects of fixed price contracts, we examine the difference in the coefficients for the periods before and after fixed price in the experiment areas and we test the hypothesis that the difference equals a particular value (c). That is, we test HO: $B_{DNY}-B_{DNYFP} = c$ and $B_{MO}-B_{MOFP} = c$ for New York and Missouri respectively. In cases where $c<0$, costs are higher than they would have been under a traditional contract. At a 95 percent confidence level for example, we would accept the hypothesis when the computed F-statistic is less than 3.86. This is for an F-statistic with 1 and 448 degrees of freedom.

In regard to other issues, we found that our structural cost equations performed reasonably. Results are similar for both the TCPB and TCPBP cost equations. We find that both an increase in the percentage of fields audits (AUDPCT) and an increase in processing time lead to higher cost per bill. A one percentage point increase in field audits (about 55% of providers received field audits over the years that we examine) leads to an increase in cost per claim of about one cent. A one day increase in processing time leads to an increase of about 3 cents per claim. The increase in cost due to more field audits is explained simply by the expense of a higher level of effort; the higher costs due to slower processing reflect the adverse consequence of processing bills on older, less automated systems as well as the greater cost that attends more careful development of incomplete information.

No statistically significant relationship is found between the percentage of providers on PIP and cost per claim.

In regard to labor costs, we find that both the clerical wage (CLRK) and the annual salary for senior systems analysts (SRSYANL) is, as we would expect, significantly related to cost per bill. The clerical wage is directly related to cost per bill; a rise of $1.00 in the weekly wage is associated with an increase of about four and a half cents in reported cost per bill. Rather surprisingly, in Table 2.14 an increase of one thousand dollars in the average wage of senior systems analysts is associated with a decline of as much as 4 cents in reported cost per bill. This negative correlation may reflect a substitution effect. That is, areas with a high demand computer environment and hence higher salaries may be able to attract a more productive systems analyst.

In regard to bill mix, we find that costs tend to fall when inpatient claims are replaced by higher percentages of outpatient (HHAPCT), home health

agency (HHAPCT), or other miscellaneous (OTHPCT) bills. This relationship does not hold for skilled nursing facility bills, where we find in Table 2.14 that an increase in SNF bills relative to inpatient bills increases costs. A one percentage point increase in outpatient, HHA, and other types of bills (matched, of course, by a corresponding percentage decline in inpatient bills) results in 3 to 4 cent reduction in reported cost per bill; a one percentage point increase in SNF bills results in an increase of 9 to 14 cents per claim.

Economies of Scale

Evidence for economies of scale is less consistent in the Part A program than we found in our previous study of the Part B program. In equations where TCPB is the dependent variable, cost declines with increases in bill volume in all cases except the one which uses the log of bill volume. The effect of volume is highly significant statistically in every case except the inverse equation. For example, the coefficient in the equation which uses the log of bill volume indicates that costs per bill rise about 45 cents when volume changes by half a million bills. However, the linear equation finds a reduction in cost of about the same magnitude.

Evidence for economies of scale is even less consistent when the dependent variable is redefined to be costs incurred by the government (TCPBP). The weaker results are a bit disturbing when we consider that the only difference between the two variables are the three observations for New York (which differ by only one cent) and the three observations for Missouri (which differ by $1.42). Why are the results so sensitive to the shift in a few of the observations that is caused by the fixed price contracts?

The reason for the surprising findings on economies of scale is perhaps best illustrated by Figure 2.2 which plots total cost per bill (TCPB) against

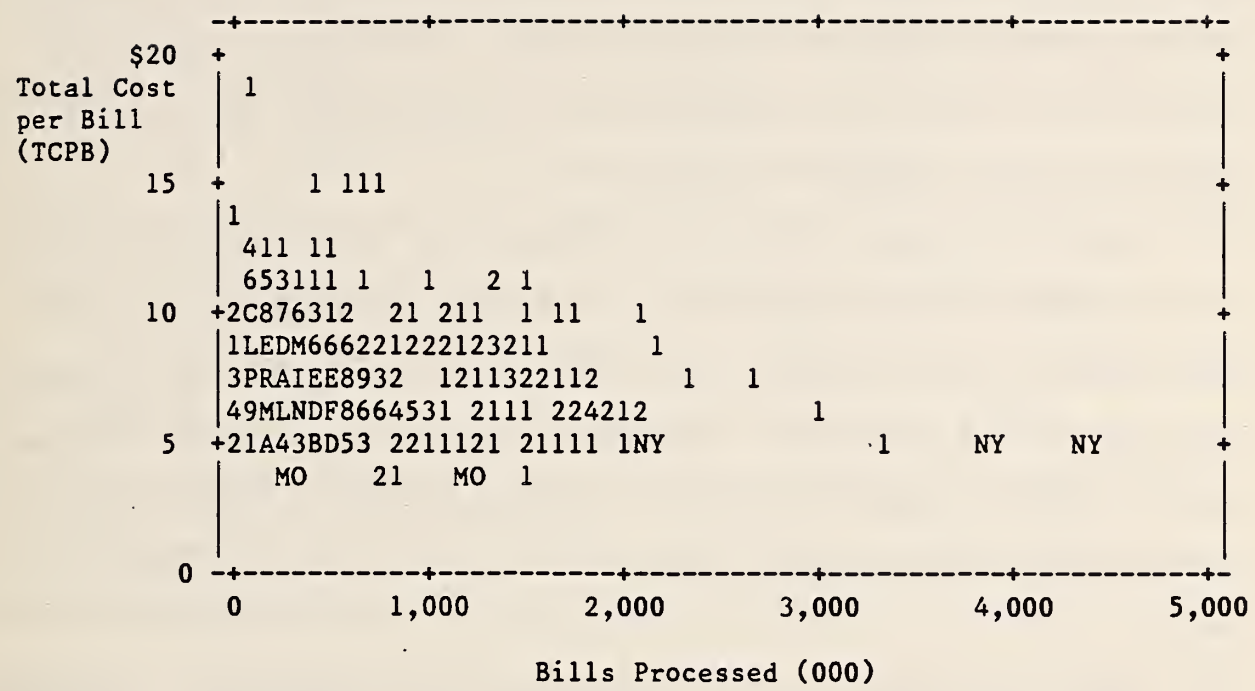

Figure 2.2: Relation of Total Cost per Bill and Bills Processed for Medicare Part A Intemediaries, 1976-1983 (all dollars in 1983 equivalents)

KEY:

Number of Observations	1	2	3	...	9	10	11	...	36
Symbol	1	2	3	...	9	A	B	...	Z

Observations for New York fixed price are denoted by NY.

Observations for Missouri fixed price are denoted by MO.

bill volume. All cost figures are in constant 1983 dollars; observations apply to all of the years (1976-1983) covered by our data. (The graph plots the number of times that an observation occurs. For example, 1 means one observation, 2 means two observations; after 9 observations, the letter A denotes 10 cases, B denotes 11 cases etc.)

Note in the figure that most of the costs per bill cluster in an area between $5 and $7 while volume clusters in a range below 1.5 million bills. Observations for New York under fixed price (designated by "NY" on the graph) are far out on the right tail of the figure (due to the consolidation of the seven New York intermediaries) along with one observation for Blue Cross of Southern California (also consolidated to achieve a large bill volume in 1983).

When this graph is plotted using TCPBP instead of TCPB, it is identical except that cost for Missouri are shifted down (by one line) to the points noted by the letters "MO". This shift is apparently just enough to make a least-squares regression line change from a downward slope to an upward slope because of the leverage that is exerted by the few sites with large bill volumes.

Our conclusion, then, is that economies of scale are fairly weak in Medicare Part A claims processing since a few changes in the data can drastically change the results in our regressions. This result is a marked contrast with our previous findings (Abt Associates, 1983) for Part B carriers where economies of scale were very strong.

Benefit Payments

Our structural model finds that Medicare Part A benefit payments per bill made by the fixed price intermediaries were not significantly different

from what payments would have been in the absence of the fixed price contracts.[1] In Table 2.17 we see that the difference in the regression coefficients for New York (DNY and DNYFP) and for Missouri (DMO and DMOFP) are each not large enough to be statistically significant. Recall that the reduced form equations in Table 2.12 also can accept the hypothesis that there are no significant differences in bill payments for either site. Our conclusion then is that the experiments had no effect on the level of benefit payments.

The primary function of a Medicare Intermediary is to accurately pay the benefits allowed by the Medicare program. One aspect of this work is to police the amount of benefit payments by auditing Medicare providers. As we have discussed in the previous chapter, both fixed price intermediaries met the standards of accuracy in bill processing and auditing required by their contracts. These standards were somewhat higher than those required of other intermediaries. Our statistical finding that benefit payments did not change in New York and Missouri relative to previous trends suggests that there was no deterioration in payment accuracy under fixed price.

We will now consider some other findings of general interest to the Medicare Program. Our model finds that administrative cost as measured by TCPB is positively associated with levels of benefit payments. That is, higher administrative costs are associated with higher benefit payments. This relationship is statistically significant at the 99 percent level. This

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[1]The appropriate statistical test is to examine the differences between the coefficients of the dummy variables for New York and Missouri. We test the hypothesis HO: $B_{DNY}-B_{DNYFP} = c$ and HO: $B_{MO}-B_{MOFP} = c$. In cases where $c<0$, benefit payments increased under fixed price; for $c>0$ they decreased; for $c=0$ there is no difference. Our test statistic is distributed as an F with 1 and 445 degrees of freedom. At a 95 percent confidence level, we would accept the hypothesis when the computed F-statistic is less than 3.86. Our tests found that we could accept hypotheses over the range where $0 \Rightarrow c > -100$ for either of the experiment sites.

Table 2.17 Structural Regression: Benefit Payments Per Bill (BILLPAY) Medicare Part A Intermediaries 1976-1983 (t-statistics in parentheses)

New York Before Fixed Price = 1 (DNY)	118.066301* (2.4123)
New York After Fixed Price = 1 (DNYFP)	184.503867** (3.0401)
Missouri Before Fixed Price = 1 (DMO)	481.551619** (9.9917)
Missouri After Fixed Price = 1 (DMOFP)	526.984649** (8.9440)
Total Unit Cost Per Bill (TCPB)	15.609443** (3.8242)
Percent of Settled Hospital Cost Reports/ Prior FY (SETCRD)	0.00389236 (0.0272)
Percent of Claims Received, Outpatient (OUTPCT)	5.075237** (6.1416)
Percent of Claims Received, SNF (SNFPCT)	-1.342942 (-0.4121)
Percent of Claims Received, HHA (HHAPCT)	-3.294779* (-2.5314)
Percent of Claims Received, Other (OTHPCT)	-4.923116* (-1.9022)
1977 (YR77)	39.324915** (3.2280)
1978 (YR78)	53.185197** (3.8584)
1979 (YR79)	67.034215** (4.2712)
1980 (YR80)	83.043935** (4.6449)
1981 (YR81)	100.683703** (5.0832)
1982 (YR82)	186.737231** (8.7106)
1983 (YR83)	179.853031** (8.3993)
R^2	.9930
HO: DNY - DNYFP = 0 $F_{1,445}$	2.5276
HO: DMO - DMOFP = 0 $F_{1,445}$	1.0253

** statistically significant, 99% level
* statistically significant, 95% level
+ statistically significant, 90% level

relationship seems to disagree with our findings for Part B carriers (Abt Associates, 1983) where we found that higher administrative expenditures were (other things equal) associated with lower benefit payments per Medicare enrollee.

This finding that Part A benefit payments are not closely associated with benefit payments is not entirely surprising considering the different types of benefits offered by the Part A and Part B programs. In Part B, considerable attention is given to examining the prices charged by physicians and the amount of services which are claimed for reimbursement. In Part A, utilization review is largely a function of professional review organizations rather than the staff of the intermediary. It appears that Medicare Part A benefit payments may not be as sensitive to day to day intermediary expenses as is the Part B program.

Our models do show that benefit payments per bill vary with the bill mix of the intermediary. We find that a one percentage point increase in non-inpatient bills matched by a corresponding decrease in inpatient bills, results in a decrease in benefits per bill of $8 to $20. This is not a surprising finding considering the generally higher costs that attend a hospitalization relative to other Part A services.

2.11 Summary and Conclusions

In summary, we have examined in this chapter the effects of the Part A fixed price contracts in New York and Missouri on three factors: cost paid by the government, actual cost as reported by the contractors, and levels of benefit payments. We have used econometric methods to analyze these fixed price contractors relative to cost reimbursed contractors for the period 1976 to 1983.

We find that the fixed price contract in Missouri achieved significant savings to the government relative to what costs would have been in the absence of fixed price. Our statistical estimates of the savings to the government range from $1.36 to $1.80 per claim. On a claims volume of 2,815,387, this implies that the government saved from $3.8 to $5.1 million on the Missouri contract. We find no consistent evidence of savings to the government in the New York fixed price contract. Costs to the government are found to be essentially the same as they would have been in the absence of the fixed price contract.

What is the reason for this discrepancy in results between New York and Missouri? The principal reason seems to be that the Missouri contract was let out on a competitive basis whereas the New York contract was negotiated between HCFA and the incumbent New York contractors. The Missouri competition was won by Blue Cross of St. Louis with an aggressive bid that was $2 million below that of the rival Kansas City intermediary. Furthermore, the Missouri contract itself is less generous. In New York, the contractor is allowed to earn incentive payments for superior performance while the Missouri contractor has no such option. New York has performed very well and it has accordingly won substantial incentive payments. New York also apparently was able to negotiate a price that covered more of the overhead costs that Medicare has traditionally reimbursed. Missouri, in contrast, submitted a highly competitive bid which substantially reduced overhead.

In the course of the fixed price experiments, both contractors have been required to report their costs using the standard rules that apply to cost reimbursed Medicare intermediaries. Our statistical examination shows that both fixed price contractors reported standard costs at a level which did not differ appreciably from what reported costs would have been in the absence of a fixed price contract.

If we accept the proposition that Medicare's cost reporting standards are an accurate reflection of true economic costs, the implication is that the competition in Missouri produced a savings to the government at the expense of the contractor in Missouri. In contrast, the negotiated contract in New York resulted in essentially no gain or loss to either party.

If we challenge the correctness of Medicare cost formulas, the implication of the Missouri experiment is that the marginal costs of operating as a Medicare intermediary are lower than the cost formulas recognize. Under the pressure of competition, a contractor may be willing to accept payment at a level below what the formula allows.

There are two principal ways to resolve these different interpretations of the apparent "loss" incurred by the contractor in Missouri. One approach would be a very careful accounting study of the direct and indirect costs of Medicare intermediaries. The other will be the test of time: how many and what kinds of firms will continue to bid for Medicare fixed price contracts. The only relevant history on this point seems to be the CHAMPUS program of the Department of Defense. In the mid 1970's DoD converted from cost reimbursed contracts to competed contracts with a fixed price per claim. The result today is a much smaller community of contractors who routinely bid for this work and a lower level of cost.

In regard to benefit payments, our analysis did not find any significant differences in benefit (per bill) paid under fixed price vs. under traditional contracts. This fact, combined with the acceptable performance of both contractors under HCFA's monitoring criteria, suggests that neither fixed price contractor was able or willing to cut corners in a manner that would affect Medicare benefit payments.

We have examined in this study how intermediary administrative cost is affected by computers and by the size of bill processing operations. We have found that intermediary costs fall significantly when bills are received in machine readable form from hospitals and other providers. Encouraging the submission of machine readable bills is clearly to the benefit of the Medicare program in terms of reducing bill processing cost.

The importance of machine readable bills suggests that there may also be significant economies of scale in intermediary bill processing. Our statistical analysis of the relation of costs to the volume of bills processed, however, did not clearly reveal this relationship. The seeming absence of economies of scale may be explained in either of two ways. First, the majority of intermediaries are still fairly small; only a few intermediaries have volumes exceeding two million bills per year. This fact may mask the presence of scale economies because there are too few examples of their presence to show as yet a statistically significant relationship. It is notable that two recent large consolidations in California and in the New York experiment have in fact achieved relatively low administrative costs. An alternative explanation, however, may be that it is now possible to achieve economies with the use of small computer systems at relatively low bill volumes. Further experimentation with intermediary consolidation will be needed to clarify the relative importance of scale and computerization.

Finally, we have found that the mix of bills processed by an intermediary has a significant impact on its administrative costs. There may be significant economies from consolidating the processing of certain types of bills (e.g., Home Health) with a single contractor. However, further analysis of this issue will be required to determine how this type of consolidation should be designed.

3.0 AUDIT PERFORMANCE IN THE PART A EXPERIMENTS

Medicare intermediaries have the responsibility to audit the costs of Medicare providers and arrive at a final settlement of cost attributable to the Medicare program. The Medicare Intermediary Manual provides general instructions for auditing; the intermediary is charged with applying these instructions to specific cases. On a theoretical level a fixed-price intermediary has both motive and opportunity to reduce the quality of its audit work because: (1) an intensive field audit is an expensive procedure that detracts from the potential profit of the contract; and (2) the required intensity of an audit is a matter of professional judgment, the correctness of which cannot be easily verified.

There is no substantial evidence that the current Medicare fixed-price contracts do, in fact, encourage a deterioration in audit work. Two factors are apparently important for assuring good performance. First, the intermediaries themselves have a vested interest, consonant with the interests of the government, to see that audits are performed properly. Second, contractors who fail to perform adequately are subject to financial assessments. To date, intermediaries in New York and Missouri have met the performance requirements of their contracts.

In this chapter we review the audit activities of the two intermediaries. In Section 3.1 we present our findings from a series of site visits by a team of auditors to each of the intermediaries. In Section 3.2 we review the monitoring mechanisms which HCFA uses to assess the performance of intermediaries and we analyze the audit performance of the fixed price contractors.

3.1 Site Observations

In this section we discuss a series of fact finding visits relating to audit which we conducted at the fixed price sites. Our visits were designed to examine the audit processes of the contractors to see how they might have changed in response to the new financial incentives of a fixed price contract. Particular attention was given to discovering changes which the contractor had undertaken in:

- procedures of the audit program;
- staffing and their professional qualifications; and
- timeliness of settlement.

Our fact finding visits were conducted by teams of Certified Public Accountants with extensive experience in auditing for Medicare and Blue Cross rate setting purposes. Each team consisted of at least two and, on occasion, three senior CPAs. The Project Director (an economist) accompanied these teams.

Fact finding began with an orientation meeting with each intermediary's vice president for audit and related senior staff. These officials were interviewed about their perceptions of changes in audit procedures which had occurred during their fixed price contracts. The meeting also established where various files were located and how files flowed between the intermediary's central office and field offices.

The next step in our review were visits to the main audit office and to the audit field offices. On these visits, our teams interviewed the audit manager to learn about the organization's audit program and to identify changes which had occurred after the start of the fixed price contract. Following this interview, the team examined a sample of audit work papers. These work papers were examined to familiarize the audit team with their

format and to permit the team to trace through the steps which were followed by the audit program.

The following sections discuss the findings of our site visits in New York and Missouri.

3.1.1 New York

Importance of the Audit Program

Hospital rates in New York State are set under the terms of a prospective reimbursement (PR) program. New York has operated a series of prospective reimbursement programs since 1971. The current version was instituted in 1982 to cover the three years from 1983 to 1985. The current program operates under a waiver from Medicare which also pays for care under its provisions. The most notable features of the New York State hospital prospective reimbursement program are the following:

- All payers (Blue Cross, Medicare, Medicaid, other insurance, and self-pay) are covered.
- Medicare, contrary to its historical practice, pays for a portion of a hospital's charity and bad debts.
- Surcharges on hospital rates are used to fund regional pools which pay for unusual levels of bad debt and charity care incurred by those hospitals which treat large numbers of impoverished patients.
- The hospital system as a whole is at risk for excessive inflation. Specifically, the system is at risk for any Medicare costs which exceed a rate of inflation that is more than 1.5 percent below the national rate of increase for Medicare in all states.
- Hospital rates are based upon actual hospital costs in 1981. These costs are trended forward by a formula which makes allowances for national and regional trends in general inflation and fluctuations in a hospital's own patient volume and casemix. Penalties exist for excessive lengths of stay and underoccupancy.

In this system, hospital audits are important because they document a hospital's potential eligibility for financial assistance from the regional pools for charity care. In addition, the audits document the degree of statewide compliance with Medicare's liability cap. Since hospital rates are trended forward by a formula based on 1981 costs, the audits for years after 1981 are not particularly important for documenting actual costs or the share of costs that are attributed to the patients of particular payers. Instead, audits are important in order to determine which hospitals are to be funded by the regional pools. The role and importance of audits are thus quite different in New York than they have traditionally been in other states.

Table 3.1 lists the major functions of the Medicare audit process and where each is now performed. The fixed price contract has moved the functions of rate review, and preliminary settlement, and the preparation of the Notice of Provider Reimbursement to New York City. Otherwise, the local plans continue to perform their traditional audit work.

Site Visit Observations

Site visits were made by our audit team to audit offices in three locations: BCBSGNY in New York City, and Blue Cross subcontractors in Syracuse and Rochester, New York. At each site our audit team examined the the availability and location of documents, composition of the professional staff, and any changes in the audit procedures due to the fixed price contracts. Observations on each site follow.

BCBSGNY

The audit function in New York City is split between a reimbursement section (i.e., rate development, initial settlements, final settlements, etc.)

Table 3.1: Locus of Audit Activities in New York State - 1984

Activity	Where Performed
A. Provider cost report received.	Various Plan Locations
B. Initial review to determine that report is complete an mathematically correct and for known audit adjustments	Various Plan Locations
C. The cost report and other information derived from initial review as well as step-down data is sent to NYC	Various Plan Locations
D. Rate review and preliminary settlement	BCBSGNY*
E. Desk review	Various Plan Locations
F. Audit scope determination	Various Plan Locations
G. Audit	Various Plan Locations
H. Audit adjustments completed	Various Plan Locations
I. Audit adjustments and information for audit step-down sent to NYC	Various Plan Locations
J. Audited step-down completed	BCBSGNY**
K. Audited step-down reviewed	Various Plan Locations
L. Complete audited cost report and Notice of Provider Reimbursement (N.P.R.) prepared and forwarded to providers	BCBSGNY*
M. Copy of completed audited cost report and N.P.R. returned to various locations	BCBSGNY*

* Performed by local plans prior to the fixed price contract.
**Performed by Blue Cross/Blue Shield of Greater New York (BCBSGNY) prior to the fixed price contract

and the provider audit section. A substantial reorganization of the BCBSGNY operation occurred following the start of the fixed price contracts. The effects of this reorganization on the Medicare audit function was limited to the reimbursement and provider appeals area. The reimbursement section was segregated between the private sector (Blue Cross) and Medicare and the staff handling the Medicare reimbursement activities doubled as did the number of providers. The provider appeals section was centralized in New York City. The staffing in the provider audit section remained unchanged and consists of an Assistant Vice President (C.P.A.), Director, Audit Managers (3), Supervisors (10), and Staff Auditors (41). In addition to the provider audit section, there is a skilled nursing facility/home health agency section which handles both the reimbursement and audit function, and a system support and provider-based physician audit section under the direction of the Assistant Vice President.

We were informed that the audit program was being modified during the period of the fixed price contract negotiations. It is our understanding that the revised audit program was enhanced for CREP evaluations and various audit steps were reemphasized. The revised audit program was provided to the subcontracting New York plans, however, it was not mandatory for the individual plans to use this audit program. The Syracuse and Rochester Plan modified their existing audit programs by incorporating portions of the revised New York City program.

All audit and reimbursement files pertaining to the providers in the BCBSGNY are available at the New York office. For the other New York plans under the fixed price contract only reimbursement files are located in New York City; audit files remain at the local plan sites.

The consolidated reporting to HCFA is prepared by the Syracuse office of Blue Cross of New York. This office also prepares and monitors the Medicare Part A work plan for all the participating plans. There appears to be no formal procedures to review the subcontracting plans' audit work other than the monitoring of the work plan. It was indicated to us that reliance was placed on the CREP evaluations for the purpose of monitoring the audit performance of the individual plans. Periodic joint plan meetings are held for educational and instructional purposes.

Rochester

All audit work papers relative to the providers in the Rochester plan area are available at the plan office. In addition, there are separate provider correspondence files, separate provider Part B information files, separate final settlement files, and separate permanent files.

We were informed that the basic level of staffing did not change under the fixed price contracts and consists of a Director of Audit and Reimbursement, Audit Manager, Audit Supervisor, six staff auditors, and one clerical person.

Discussions with the audit manager indicate that no major changes have occurred in the last few years in terms of the size of the audit staff. Staff turnover in recent years has been small. Personal computers have recently been introduced to assist the professional staff in performing arithmetic and logical checks of audit data.

There appeared to be some gradual changes in auditing procedures beginning in late 1981 and 1982. The audit program was revised, but it does not appear to be a material revision. We were informed that part of the revision was to incorporate CREP evaluation items and also to incorporate

portions of the New York City program. The desk reviews are subject to a professional review by the audit manager, whereas in the past, they were not reviewed. The purpose of this review is to determine the scope and extent of the audit steps to be performed for a particular provider. In the past, the complete audit program was being performed; under the new system, certain steps may be eliminated depending on the judgment exercised in the professional review. In the two audit files reviewed by our team of CPAs, however, it appeared that most of the audit steps were still being performed under the new system, and there did not appear to be any appreciable difference in the amount of work performed. In addition, the audit work papers in the past were reviewed once by the Audit Director or Audit Manager. Under the new system, there is a three tier review. The audit is subjected to a review by the audit supervisor, then the Audit Manager, and finally, the Audit Director.

Syracuse

All audit work papers relative to the providers in the Syracuse Plan area are available at the plan office. In addition, there are available separate provider correspondence files, separate provider Part B information files, separate settlement files, separate appeal files, and separate PSRO files.

We were informed that the level of staffing did not change after the implementation of the fixed price contract.

Procedures within the audit department do not appear to have changed significantly from those followed before the implementation of the fixed price contract other than the fact that the rate reviews and settlement process were transferred to New York City. The plan does not appear to use a formal audit program similar to other plans we have reviewed, but rather a work paper index

and cross reference format. This is a preprinted form which lists certain items to be reviewed and has blank spaces for listing additional items. We were informed that items to be reviewed would be determined based on the desk review which is performed by a field auditor. The work paper index has been revised since the implementation of the fixed price contract. It is difficult to make a comparison between the index used prior and after the implementation of the fixed price contract. Indications of actual audit steps performed would have to be derived from the work papers as they are not defined in the index. However, our general impression from a brief review of the index of two hospitals and the volume of paper in the audit files would indicate that there does not appear to be any decrease in the amount of audit work performed.

Logbook Analysis

At the Syracuse plan, we were also able to obtain logbooks which keep track of when cost reports are received and when major tasks in the audit process are completed. Logbooks in a comparable format were available in Syracuse for cost reports on the 1978 and 1980 fiscal years. These correspond respectively to periods of audit work performed before and after the start of the fixed price contract.

We conducted a statistical analysis of the Syracuse logbooks to see if significant changes had occurred in the time which it took to complete major steps in the audit cycle. These steps were:

- Transmittal of Data to New York (for Step Down Preparation)
- Transmittal of Step Down data from New York to Syracuse
- Completion of Disk Reviews of the cost reports

- Field Audits
- Notice of Program Reimbursement

Table 3.2 summarizes this analysis. Our major finding from this analysis is that no statistically significant change in work time occurred in any of the intermediate steps of the audit process. For example, elapsed time on both the desk review and field audit step of the audit process were unchanged by the fixed price contract. However, we do find that the overall audit process did slow down. For 1978 cost reports audited under the cost reimbursed contracts the audit cycle averaged 404 days; for 1980 cost reports the cycle averaged 486 days--an increase of almost 3 months. Since our examination of staffing and the audit plans did not reveal any major changes in audit activity at the Syracuse plan, we suspect that special projects may have distracted staff from completing the cycle more quickly.

In summary, our team of auditors visited the audit offices of the Medicare prime contractor (New York) and two subcontractors (Rochester, Syracuse) to inquire about changes in audit procedures or staffing that may have resulted from the fixed price contract. We observed at each site some normal evolutionary changes in work procedures and no apparent changes in staff or the intensity of the audit effort. While some sites appear to be more efficient or more thorough than others at some aspects of auditing, our overall impression was that the audit offices are operating in accordance with professional audit standards. We should note, however, that these findings apply to the work process. We have not conducted a detailed re-audit of provider cost reports. The results of such re-audits are described in our discussion of the CREP program in the next section.

Table 3.2: Time Elapsed on Major Audit Tasks by Syracuse Blue Cross

	Cost Report Year: 1978[a]	1980[b]
1) Time Elapsed Between Cards Sent to NYC and Cost Report Received		
Number in Sample	20	18
Mean (Days)	55.20	45.61
Lowest (Days)	19	14
Highest (Days)	77	175
75% Within (Days)	61	50.75
Standard Deviation	11.27	37.21
2) Time Elapsed Between Cards Sent to NYC and Stepdown Received		
Number in Sample	20	18
Mean (Days)	14	16.39
Lowest (Days)	9	6
Highest (Days)	20	27
75% Within (Days)	19	17.75
Standard Deviation	3.96	5.87
3) Time Elapsed Between Desk Review Completion Date and Cost Report Received		
Number in Sample	20	14
Mean (Days)	266.50	231.71
Highest (Days)	424	375
75% Within (Days)	360	334
Standard Deviation	92.98	112.59
4) Time Elapsed Between Audit Completion Date and Audit Start Date		
Number in Sample	20	17
Mean (Days)	17.80	20.47
Lowest (Days)	6	7
Highest (Days)	44	38
75% Within (Days)	24.75	31
Standard Deviation	10.40	10.37
5) Time Elapsed Between NPR Date and Cost Report Received		
Number in Sample	20	17
Mean (Days)	403.90	486*
Lowest (Days)	183	276
Highest (Days)	759	689
75% Within (Days)	472.75	543.50
Standard Deviation	139.82	113.051

*Significantly different from mean for 1980 at 95% level
[a]Audited prior to fixed price contract
[b]Audited subsequent to fixed price contract

3.1.2 Missouri

Importance of the Audit Program

In the state of Missouri, the various health care payers negotiate their own reimbursement arrangements with hospitals. Unlike New York, there is no prospective reimbursement system. Audits are performed by the Medicare program to satisfy its own audit needs as well as those of the state Medicaid program.

Hospital auditing is important in Missouri because it still provides the basis for most determinations which govern a large share of Medicare's payments to hospitals. Missouri is one of the 46 states participating in HCFA's new Prospective Payment System (PPS) for Medicare. The program was introduced in October of 1983. Although PPS is intended to pay hospitals a fixed price per admission for a diagnosis as classified by a Diagnostic Related Group (DRG), the program is being implemented in stages. During the first year of PPS, hospitals are reimbursed 25 percent under the new fixed price system, and 75 percent under Medicare's traditional system of cost-based reimbursement. These proportions are to change annually until reimbursement is based solely on diagnosis in 1986.

Audit Responsibilities

Prior to the fixed price contract, Blue Cross of Kansas City and St. Louis Blue Cross had audit responsibilities for their separate areas of the state. Upon winning the contract for Missouri, St. Louis hired the Kansas City audit staff and set up an audit field office in Kansas City. This transition was completed on July 1, 1981. Therefore, very little staff attrition occurred in Kansas City in spite of the change of intermediaries.

The Kansas City plan was current in provider audits at the time of transition so the change was relatively simple. Cost reports filed for fiscal periods through September 30, 1980 were finalized with the exception of two providers. All cost reports for fiscal years ended subsequent to September 30, 1980 are under the fixed price contract.

The organization of audit work and the flow of work papers did change in Missouri to the extent that St. Louis supervised the audits performed in Kansas City. Table 3.3 shows the flow of work between the two offices.

St. Louis also instituted a major change in its audit plan shortly after the start of the fixed price contract and this new plan was also implemented in Kansas City. The new audit plan was designed to more closely follow the scoring procedures of CREP.

Our examination of audit work papers in St. Louis and Kansas City revealed that both sites were current in their work. All audit work papers for Kansas City providers were readily available in the Kansas City field office. Desk review work papers, finalized cost reports and audit adjustments for both sites are centrally located in St. Louis. Review of the St. Louis work papers also showed them to have essentially "more paper" than did Kansas City. This apparently reflects differences in the audit plans of the two intermediaries under the previous contracts.

Logbook Analysis

Our audit team also examined the audit logbook of both St. Louis and Kansas City. The logbooks keep track of each provider's cost report in terms of when the report is received and when certain steps in the audit process are completed. The logbooks are accordingly a good guide to the productivity of the auditors. The ready availability of logbooks and evidence that they are

Table 3.3: Flow of Audit Work in Missouri Under the Medicare Fixed Price Contract

	Activity	Where Performed
A.	Provider cost report	St. Louis
B.	Desk review	St. Louis
C.	Preliminary (initial settlements)	St. Louis
D.	Rate development or PIP payments	St. Louis
E.	Cost report for Kansas City providers and desk review forwarded to Kansas City	St. Louis
F.	Scope determination	St. Louis & Kansas City
G.	Audit:	
	Full Scope	St. Louis and Kansas City
	Limited Scope	St. Louis and Kansas City
	No Audit	St. Louis and Kansas City
H.	Audited cost report returned to St. Louis with audit adjustments	St. Louis
I.	Cost report completed with audit adjustments	St. Louis
J.	Final settlement	St. Louis

routinely kept up-to-date are both indicators of an orderly, well controlled audit process. We found the logbooks at both sites to be in good order.

We also conducted a statistical analysis of the logbooks to see if any steps in the process were unusually fast or slow. Where data were available, we also checked to see if marked differences had occurred before and after the fixed price contract in terms of how quickly various steps of the audit work were being performed. Since reductions in time for a particular step could indicate either improved productivity or less thorough work, the logbook times serves as a guide for further examinations of the audit process.

For St. Louis, we were able to conduct this analysis for one year prior to the fixed price contract (cost reports for 1980) as well as for the two following years (cost reports for 1981 and 1982).[1] Result appears in Table 3.4. Results for 1982 are based on incomplete data since all of the audits for that year had not been completed at the time that we obtained the logbooks. We accordingly direct or remarks mainly at 1980 and 1981.

For Kansas City, we could not make a before vs. after comparison because the flow of work was quite different in the two periods when the office was respectively a prime contractor and a field office to St. Louis. We accordingly present results only for the period after the fixed price contract in Table 3.5. Again, data for 1982 cost reports are incomplete and should be interpreted with caution.

Statistical analysis of the St. Louis logbooks indicates that:

- no changes occurred in the mean time elapsed between the receipt of a cost report and an initial settlement;
- mean time elapsed on desk reviews increased;

[1]Cost reports for fiscal years ended after September 30, 1980 are audited under the fixed price contract.

Table 3.4: Time Elapsed on Major Audit Tasks by St.Louis Blue Cross

	Cost Reports for Provider FY:		
	1980[a]	1981[b]	1982[b,c]
Initial Settlement			
1) Time Elapsed Between Initial Settlement and Cost Report Received			
Number in Sample	106	171	170
Mean (Days)	41.92	51.52	40.44
Lowest (Days)	1	2	2
Highest (Days)	685	346	395
75% Within (Days)	35.25	61.00	48
Standard Deviation	74.5	45.3	47.1
2) **Desk Review**			
Number in Sample	112	187	138
Mean (Days)	113.89	136.64*	208.86*
Lowest (Days)	20	12	22
Highest (Days)	191	291	400
75% Within (Days)	147	175	267
Standard Deviation	44.2	55.8	79.4
3) **Field Audit**			
Number in Sample	101	151	75
Mean (Days)	68.75	19.41*	21.20*
Lowest (Days)	4	1	1
Highest (Days)	269	381	376
75% Within (Days)	98	22	22
Standard Deviation	55.1	34.8	44.4
4) **Review Completed Without Field Audit**			
Number in Sample	14	31	5
Mean (Days)	184.07	363.61*	150.20
Lowest (Days)	56	29	76
Highest (Days)	689	571	358
75% Within (Days)	183	393	246
Standard Deviation	160.7	118.1	118.2
5) **Review Completed with Field Audit**			
Number in Sample	100	148	36
Mean (Days)	348.68	404.45*	297.50*
Lowest (Days)	50	190	161
Highest (Days)	1,053	778	449
75% Within (Days)	365	448.50	364.75
Standard Deviation	158.6	85.7	80.2

[a]Prior to fixed price contract.
[b]After fixed price contract
[c]Preliminary, baseed on material available in October 1983.
*Statistically different from corresponding value for 1980, 95% confidence level.

Table 3.5: Time Elapsed on Major Audit Tasks by Kansas City Field Office

	10/1/80-9/30/81	10/1/81-9/30/82
1) Time Elapsed Between Date Cost Report Received in St. Louis (Field) and Date Received in Kansas City		
Number of providers in sample	112	N/A
Mean (Days)	130.44	N/A
Lowest (Days)	9	N/A
Highest (Days)	267	N/A
75% Within (Days)	167.5	N/A
Standard Deviation	54.0	
2) Time Elapsed Between Audit Started and Completed		
Number of providers in sample	98	48
Mean (Days)	9.26	24.92*
Lowest (Days)	1	1
Highest (Days)	44	235
75% Within (Days)	14.25	19
Standard Deviation	8.6	52.4
3) Time Elapsed Between Returned to St. Louis and Audit Completed		
Number of providers in sample	112	47
Mean (Days)	94.92	82.62
Lowest (Days)	4	6
Highest (Days)	255	279
75% Within (Days)	122	139
Standard Deviation	54.8	79.3
4) Time Elapsed Between NPR Date and Cost Report Received in St. Louis		
Number of providers in sample	106	27
Mean (Days)	350.45	269.33
Lowest (Days)	6	58
Highest (Days)	574	533
75% Within (Days)	378	358
Standard Deviation	80.1	111.5

*Statistically different from corresponding value of previous year, 95% confidence level.

- mean time elapsed on field audits decreased dramatically;
- mean time elapsed on the entire audit process increased for all cases, both those with and without a field audit.

From these observations, it is difficult to avoid the conclusion that the intermediary's audit work became less thorough. It is clear that St. Louis was carrying a larger workload under the fixed price contract. It seems that the work process changed so that more time was spent on desk reviews. Mean time for desk reviews rose from 114 days for 1980 reports to 137 days for 1981 reports. Field audits also were clearly reorganized so that audits once started were concluded more quickly. Mean time elapsed from the start to end of a field audit fell from 69 days for 1980 to 19 days for 1982. This fall could mean that the intermediary was being less thorough in its field audits, but it may also mean that auditors went to the field better prepared (due to the longer desk reviews) and they made a more concerted effort to subsequently follow up with the provider to resolve any questions and close the audit. It is not clear that this combination of longer desk reviews and shorter field audits improved the overall workflow or the effectiveness of audits. For providers who were field audited, mean time from their submission of a cost report to the issuance of a Notice of Provider Reimbursement (NPR) increased from 184 days for 1980 to 364 days for 1981. Similarly, providers who were judged to need only a desk audit experienced an increase in elapsed time from 349 days for 1980 to 404 days for 1981.

The conclusion that we tentatively draw from this pattern is that St. Louis made an effort to increase productivity in those areas (desk review, field audit) which intensively use professional staff. There may have been some reductions in non-professional staff (or at least few new hires to handle the larger workload) devoted to the more routine followup work involved in issuing the NRP. Since many of the providers in Missouri operate under

Periodic Interim Payment (PIP), there would also be little demand by the provider community to accelerate this phase of the work.

Our analysis of Kansas City's logbook reported in Table 3.5 does not allow us to draw any conclusions about operational differences before and after the start of the fixed price contract because comparable data were not available. Logbooks for 1981 and 1982 cost reports (the first two years after the fixed price contract) were examined. From these, it appears that field audits were completed very promptly by Kansas City. Mean elapsed days from the start to the completion of field audits was nine days. This again suggests that the mean field audit times for St. Louis (69 days) were excessive and that productivity improved after the start of the fixed price contract.

In summary, our audit team visited the Blue Cross of St. Louis audit offices in both St. Louis and Kansas City. We observed several changes in work procedures which resulted from the fixed price contract. Most of these changes were directed at consolidating the control of the St. Louis office and assuring uniform work procedures. It appears that these changes lead to an overall slowdown in the audit work cycle. There was also a substantial decrease in the amount of time which elapsed on field audits such that St. Louis audit time came much closer to the experience of the other sites that we have examined. Our overall impression of the audit process in Missouri is that it is being conducted in a well documented and professional manner. We again must postpone any judgment on the quality and effectiveness of the audit work to the discussion of CREP scores in the next chapter.

Our basic finding is that the audit processes of the intermediaries underwent only normal evolutionary changes following the introduction of the

fixed price contracts. No major changes in staffing or the level of effort have occurred.

3.2 Indicators of Audit Quality

In this chapter we examine the procedures which HCFA uses to monitor the quality of audits performed by Medicare intermediaries. The performance of fixed price contractors is reviewed both in terms of their contractual requirements and their performance prior to fixed price. We also compare the fixed price contractors to peers who have audit responsibilities for similar numbers of providers. Our overall finding is that the fixed price contractors have performed acceptably under the terms of their contracts.

3.3 CPEP Auditing and Settlement Standards

HCFA utilizes a number of quantitative and qualitative tools to monitor the timeliness, cost and effectiveness of intermediary performance of its provider audit and reimbursement responsibilities. This chapter reviews some tools in regard to what they reveal about the performance of the fixed price intermediaries in Missouri and New York.

On a quarterly basis, intermediaries report statistical data concerning the timeliness of their cost report settlement activities on the Provider Audit Activity Report, HCFA-1822. This report lists on an aggregate basis the total cost reports due and received by provider type and fiscal years and the various processing steps such as desk review and field audit completed to final settlement. A ratio of total settlements to total cost reports due by provider type is also included in the report. From these and other reports HCFA prepares the quarterly Provider Audit Activity Report and the Cost

Settlement Report which contain statistical timeliness and unit cost measures by category of audit activity and type of provider for all intermediaries.

One of the best indicators of the efficiency of a contractor's cost report settlement process is the percentage of cost reports with provider accounting fiscal years ending (FYEs) in the prior federal fiscal year which are settled by the end of the current federal fiscal year. The actual percentage of settled cost reports for each intermediary is adjusted by HCFA to compensate for the quarterly variability of cost report FYE dates. For example, a contractor with a high proportion of hospitals with FYEs in the second half of the federal fiscal year would have its percentage adjusted upwards while a contractor with a majority of hospitals who have FYEs in the first half of the federal fiscal year would have its percentage reduced.

Table 3.6 displays the adjusted percent of settled cost reports (by provider type) and the national rankings of intermediaries in the experimental areas and selected comparison intermediaries (Michigan Blue Cross, Aetna-Conn., Travelers-NY for BCBSGNY and Pittsburgh Blue Cross for St. Louis Blue Cross) from fiscal 1980 to 1983. These comparison plans are used because they are of similar size to the experimental sites in terms of bills processed and numbers of providers audited. In fiscal 1980, the last full year before the fixed-price contract in New York, BCBSGNY ranked 51 (of 83) for hospital settlements, 44 (of 81) for SNF settlements and 66 (of 81) for HHA settlements. Except for the SNF category, its performance was generally inferior to its sister plans in the state and to Aetna-Conn. and Travelers-NY. It did, however, outrank Detroit Blue Cross in the hospital and SNF categories. In the three fixed-price years, 1981-1983, BCBSGNY's performance was inferior to both Aetna-Conn. and Travelers-NY in every category except hospital

Table 3.6: Timeliness of Cost Report Settlement -- Percent of Cost Reports (by Provider Type) with FYE in Prior Federal Fiscal Year Settled as of September 30th of Current Fiscal Year, Adjusted by FYE Dates: Missouri and Comparison Intermediary

Intermediary	FY1980 Adjusted Percent of Settled CR	National Rank	Intermediary	FY1982 Adjusted Percent of Settled CR	National Rank	Intermediary	FY1982 Adjusted Percent of Settled CR	National Rank	Intermediary	FY1983 Adjusted Percent of Settled CR	National Rank
	Hospitals	Out of 83		Hospitals	Out of 77		Hospitals	Out of 75		Hospitals	
Pittsburgh	128.2	4	Pittsburgh	132.0	3	Pittsburgh	127.9	8	Pittsburgh	133.0	3
St. Louis	106.7	21	Kansas City	122.0	10	St. Louis	63.6	68	St. Louis	42.9	70
Kansas City	106.2	22	St. Louis	89.3	42						
	SNF	Out of 81		SNF	Out of 75		SNF	Out of 74		SNF	
St. Louis	101.5	34	Kansas City	113.0	24	Pittsburgh	101.1	44	Pittsburgh	108.7	NA
Kansas City	99.0	41	St. Louis	81.9	60	St. Louis	63.5	77	St. Louis	36.5	NA
Pittsburgh	98.0	42	Pittsburgh	66.5	69						
	HHA	Out of 81		HHA	Out of 76		HHA	Out of 74		SNF	
Kansas City	129.0	5	Kansas City	130.0	6	Pittsburgh	99.8	61	Pittsburgh	119.0	NA
Pittsburgh	113.4	29	St. Louis	106.7	39	St. Louis	90.4	68	St. Louis	48.9	NA
St. Louis	110.0	31	Pittsburgh	89.2	63						

Table 3.6: Timeliness of Cost Report Settlement -- Percent of Cost Reports (by Provider Type) with FYE In Prior Federal Fiscal Year Settled as of September 30th of Current Fiscal Year, Adjusted by FYE Dates: New York and Comparison Intermediaries (Continued)

FY1980			FY1981			FY1982			FY1983		
Intermediary	Adjusted Percent of Settled CR	National Rank	Intermediary	Adjusted Percent of Settled CR	National Rank	Intermediary	Adjusted Percent of Settled CR	National Rank	Intermediary	Adjusted Percent of Settled CR	National Rank
	Hospitals	Out of 83		Hospitals	Out of 77		Hospitals	Out of 75		Hospitals	
Rochester	100.0	31	Aetna-Conn.	104.3	27	Aetna-Conn.	98.3	38	Aetna-Conn.	81.8	NA
Watertown	100.0	31	Travelers-NY	9437	36	Travelers-NY	88.8	51	New York City	77.1	NA
Buffalo	94.7	36	New York City	94.7	48	New York City	74.3	60	Travelers-NY	76.1	NA
Utica	93.1	38	Detroit	70.8	59	Detroit	63.6	68	Detroit	74.8	NA
Travelers-NY	92.6	39									
Aetna-Conn.	87.6	44									
Syracuse	85.0	50									
New York City	82.7	51									
Detroit	77.2	57									
Albany	55.6	69									
	SNF	Out of 81		SNF	Out of 75		SNF	Out of 74		SNF	
Travelers-NY	105.2	29	Aetna-Conn.	115.2	21	Aetna-Conn.	117.4	21	Aetna-Conn.	114.9	NA
Aetna-Conn.	104.0	31	Travelers-NY	100.2	39	Travelers-NY	88.3	60	Travelers-NY	97.9	NA
Rochester	100.0	39	New York City	86.3	58	New York City	87.9	62	New York City	90.3	NA
Buffalo	97.1	43	Detroit	87.9	64	Detroit	85.1	70	Detroit	43.2	NA
New York City	96.3	44									
Utica	96.0	45									
Syracuse	89.2	49									
Detroit	87.2	54									
Watertown	80.0	61									
Albany	74.4	68									
	HHA	Out of 81		HHA	Out of 76		HHA	Out of 74		SNF	
Aetna-Conn.	121.8	15	Travelers-NY	160.0	1	Travelers-NY	160.0	1	Travelers-NY	160.0	NA
Rochester	102.0	44	Aetna-Conn.	114.1	27	Aetna-Conn.	11.2	34	Aetna-Conn.	126.6	NA
Albany	100.0	47	Detroit	90.0	62	New York City	99.0	64	New York City	91.2	NA
Buffalo	100.0	47	New York City	87.9	64	Detroit	85.1	70	Detroit	43.2	NA
Syracuse	100.0	47									
Utica	100.0	47									
Watertown	100.0	47									
Michigan	99.8	54									
New York City	83.7	66									
Travelers-NY	*	*									

* No HHA cost reports due for Travelers-NY.

settlements in fiscal 1983 where it outscored Travelers-NY and was superior to Detroit Blue Cross in every category except HHA settlements in fiscal 1981.

St. Louis Blue Cross in fiscal 1980, the last full year before the fixed-price contract, outranked its sister plan, Kansas City Blue Cross, in hospital and SNF settlements but fell below KCBC for HHA settlements. Pittsburgh Blue Cross's performance in fiscal 1980 was erratic, ranking 4 (of 83) for hospitals, 42 (of 81) for SNFs and 29 (of 81) for HHA settlements. In 1981, the transition year, St. Louis's performance was always inferior to Kansas City but superior to Pittsburgh in every category except hospital settlements. In the two full fixed-price years, 1982 and 1983, Pittsburgh outperformed St. Louis in every provider category.

While the performance of the fixed-price contractors in relation to the comparison intermediaries appears rather poor in 1982 and 1983, it must be remembered that both BCBSGNY and St. Louis Blue Cross were operating under unique conditions which mandated more field audits and therefore required more time to reach the settlement stage. As we note in Section 3.3, the uniform rate setting programs and the combined hospital audit system in New York and the specific audit effort levels required by the fixed-price contract in Missouri have resulted in ratios of field audits to total settlements well above the national averages for both contractors in fiscal 1982 and 1983.

Both contractors were also operating under specifically tailored performance standards to be used to assess liquidated damages and, in the case of New York, to award incentives payments. The applicable standards for BCBSGNY were the following:

	FY 81	FY 82	FY 83
Hospital Cost Reports--percent settled in one year	51%	65%	74%
SNF Cost Reports--percent settled in one year	56%	68%	81%
HHA Cost Reports--percent settled in one year	71%	88%	91%

BCBSGNY not only exceeded these standards in every year of the fixed-price contract, it also qualified for incentive payments based on its performance against these standards.

The cost report settlement standards in the Missouri contract are not comparable to New York because they are based on passing scores rather than percentages of settled cost reports. Liquidated damages in Missouri were to be assessed when the passing scores fell below the following levels:

	FY 81	FY 82	FY 83
Timeliness of Cost Report Settlement (passing scores)	N/A	85	95

Although the results for FY 1983 have yet to be finalized, we do know that St. Louis Blue Cross barely met the standard for FY 1982 with a passing score of 85 and was not assessed liquidated damages for its timeliness of cost report settlement performance.

Auditing Performance Under CREP

HCFA's major qualitative evaluation system for the provider audit and reimbursement area is the Cost Report Evaluation Program (CREP). CREP is a comprehensive review program designed to evaluate the quality of the settlement of hospital cost reports by intermediaries. It consists of a structured review by HCFA regional office staff of a statistical sample of settled cost reports. CREP is composed of a series of questions (71 in fiscal year 1981 for hospitals) addressing the most significant areas of cost reimbursement. Regional reviewers are required to answer all the applicable questions based on their analysis of cost reports, desk reviews, intermediary work papers, files, and other pertinent documentation.[1] At the conclusion of the review, a

[1]All CREP questions are not applicable to every cost report.

report of findings and recommendations is issued to each intermediary together with a score which is based on the answers to the CREP questions.

In both the New York and Missouri fixed-price experiments, the intermediaries have been monitored with CREP. Table 3.7 displays CREP scores for the experiment areas before and during the fixed-price contracts. The number in parenthesis under the CREP scores is the sample variance. The number under the variance is the total sample size.[1]

As the table shows, there are some serious deficiencies in the availability of CREP scores for Missouri. St. Louis, the eventual winner of the fixed-price contract, was not evaluated by CREP during FY 1980, the first year of that program.[2] St. Louis was evaluated in FY 1981, but the interpretation of its relatively low CREP score is contaminated by the fact that this was the transition year between its cost-reimbursed and fixed-price contract. No FY 1981 CREP evaluation is available for the outgoing Kansas City intermediary, although a FY 1980 score is available to indicate that Kansas City did a better-than-average job with a CREP score of 91.8 and a national ranking of 15. A CREP score is available for St. Louis for FY 1982. The sample for that year is quite small (five hospitals). It appears, however, that the sample is appropriate for our study because it is randomly drawn from providers who were previously served by either St. Louis or Kansas City.[3] Hence, the CREP 1982

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[1]HCFA does not compute a variance for the CREP score. The appendix to this chapter discusses the formulas for computation of the CREP variance and tests of statistical significance.

[2]A pilot CREP was undertaken for FY 1979. We have been advised by HCFA that pilot scores are unreliable and should not be used. Consequently, FY 1980 is the first available year for CREP scores.

[3]The CREP ranking report does not publish the FY 1982 CREP score for St. Louis on the grounds that the sample is not comparable with the previous year's sample for FY 1981, which was confined to the providers served by St. Louis under its cost contract. As discussed above, the CREP score is informative for the state as a whole.

Table 3.7: CREP Scores in Missouri and New York Before and After the Start of Fixed Price Part A Contracts

	1980θ		1981θ		1982	
	CREP Score (Variance) No. Observations	National Rank	CREP Score (Variance) No. Observations	National Rank	CREP Score (Variance) No. Observations	National Rank
Kansas City	91.8* (.67) 8	15	NA	NA	NA	NA
St. Louis	NA	NA	76.19b (3.42) 9	65+	90.7 4.94 5	NA
Buffalo	96.4 (.27) 7	3	89.3a (3.87) 8	33+	NA	NA
Rochester	83.0* (11.67) 5	42	83.5 (11.99) 7	49+	NA	NA
Syracuse	95.2$ (1.09) 6	7	91.5a (2.40) 7	26+	NA	NA
Utica	86.4* (.55) 8	30	87.9a (1.24) 8	38+	NA	NA
Albany	95.5T (1.19) 7	6	95.76 (6.86) 7	5	NA	NA
New York City	93.1* (1.85) 9	11	86.8a (8.87) 9	40+	NA	NA
All New York	92.08 (.80) 42	NA	88.85c (1.21) 46	NA	89.71c (3.76) 10	45

θ Cost reimbursed years
+ Significantly different from Albany FY 1981 at 99 percent level of confidence.
* Significantly different from Buffalo FY 1980 at 99 percent level of confidence.
$ Significantly different from Buffalo FY 1980 at 95 percent level of confidence.
T Significantly different from Buffalo FY 1980 at 90 percent level of confidence.
a Significantly different from same intermediary FY 1980 at 99 percent level of confidence.
b Significantly different from Kansas City FY 1980 at 99 percent level of confidence.
c Significantly different from All New York FY 1980 at 99 percent level of confidence.

score for St. Louis applies to the "experiment area." What is missing in CREP for the Missouri area is a good set of baseline scores on both of the cost-reimbursed intermediaries prior to the experiment.

The available CREP 1982 score shows that St. Louis did a satisfactory auditing job on hospitals during the early part of its fixed-price contract. (The St. Louis CREP score of 90.7 was considered to be a passing score by the standards of the fixed-price contract. The national passing score for all cost-based intermediaries in FY 1982 was 82.) We cannot with certainty tell from the CREP evidence if St. Louis improved its performance under fixed pricing relative to its performance under a cost contract, although the improvement in its score from FY 1981 to FY 1982 suggests that this happened. The St. Louis score for FY 1982 is not statistically different from the score for Kansas City in FY 1980. This suggests that St. Louis under fixed pricing did not perform any better or worse than Kansas City had under its cost-reimbursed contract.

In New York, CREP provides a better picture of auditing performance before and after the start of the fixed-price contract. It appears that auditing performance deteriorated under the fixed-price contract although it remains within acceptable levels. Table 3.7 also lists the CREP scores and national rankings of six of the intermediaries serving in New York State prior to the fixed-price contract (the small Watertown plan is included in the Utica sample). As the table shows, the plans all had acceptable performance under their cost-reimbursed contracts. In FY 1980, Buffalo (CREP 96.4, rank 3) and Albany (CREP 95.5, rank 6) had the best CREP scores of the groups; while Rochester (CREP 83.0, rank 42) had the worst. The relatively rankings of the plans switched in FY 1981. Albany (CREP 95.76, rank 5) remained the plan with the highest score, while Buffalo's score (CREP 89.3, rank 33) fell to the

lowest relative position. All scores in FY 1981 remained adequate by CREP standards.

The row labeled "All New York" is a composite score for the six intermediaries serving in FY 1980 and 1981.[1] The All New York score for FY 1982 is the score for the fixed-price intermediary, Blue Cross of New York. The CREP sample for FY 1982 is drawn from all providers in the state who were previously served by the cost-reimbursed plans. Consequently, the All New York scores are comparable from year to year in the sense that their samples are drawn from all providers in the state.

The FY 1982 CREP score for New York (89.71) is lower than the composite score for FY 1980 (92.08). The difference in the two scores is statistically significant at the 99 percent level of confidence. This indicates that New York, under fixed pricing, performed somewhat worse than the composite performance of the separate plans under cost-reimbursed contracts. The composite score for New York in the FY 1981 transition year is also lower than the score for FY 1980 and this difference is again statistically significant at the 99 percent level. This shows that the composite quality of the audit work in New York deteriorated during the transition period although it remained within levels acceptable to the contract.[2]

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[1]The composite score is the weighted CREP score where data from the separate plans have been treated as one large sample.

[2]Our comparison of the various CREP scores assume that the scores are analytically comparable from year to year. The components of the CREP scores have changed from year to year. This means that exact comparison of CREP scores are impossible. However, CREP scores are analytically comparable in the sense that each year's score is meant to be a statistical predictor of the "true performance" of the intermediary.

Other Auditing Effort Statistics

There are several statistics collected by HCFA which provide some information on the cost and intensity of an intermediary's audit effort. Listed below are two of the most relevant of these statistics:

- Total audit costs per provider. Other things equal, one would expect that higher levels of audit cost per provider would signify a more intensive audit. Factors which might offset this interpretation include (1) variation in the local wage rates paid to auditors, and (2) variations in the complexity of the cost reports required in the various states.

- Ratio of field audits to total settlements. Higher values of this ratio should indicate a higher level of auditing effort by an intermediary. One caveat is that a "field audit" may vary in its intensity from site to site.

Some preliminary evidence on the quality of the audit and settlement activity in the New York contract is contained in Table 3.8. The table compares the first two complete years of the fixed-price contract (FY 82 and FY 83) with two previous years (FY 80, FY 79) where audits were performed under traditional cost contracts. (FY 81 is excluded from the table because it is a transition year.) The table shows that intermediaries in New York State have traditionally performed more field audits (as a percent of total settlements) than the national average for all Medicare intermediaries, and this pattern continued during the fixed-price contract. For example, in FY 1980 (the last full year of the cost-reimbursed contracts), the various New York intermediaries had 75 (Utica) to 100 (Rochester) percent of their settlements accompanied by a field audit; while in 1982 and 1983, the field audit rates by the fixed-price intermediary were 95 and 99 percent, respectively. This level of effort compares quite favorably with the national average where 66 percent of settlements were field audited in 1980 and only 50 and 65 percent were field audited in 1982 and 1983. As we noted earlier, the high level of field audits reflects the practice of universal auditing as required

Table 3.8: Auditing Efforts by Intermediaries Serving the Part A Experiment Areas - FY 1979 to FY 1982

Provider Audit and Reimbursement Costs

Kansas City, St. Louis Area

	FY 1983	FY 1982	FY 1980		FY 1979	
	St. Louis	St. Louis	St. Louis	Kansas City	St. Louis	Kansas City
Total Costs	$1,810,423	$1,605,239	$745,869	$414,962	$780,754	$406,931
Number of Providers*	335	307	166	94	164	96
Cost Per Provider	5,404	5,229	4,493	4,414	4,761	4,239
Field Audits** Vs. Total Settlements	70:75	117:135	77:114	42:62	76:116	36:60
Percent Field Audits	93%	87%	68%	68%	66%	60%

New York State

	FY 1983	FY 1982
	New York	New York
Total Costs	$4,090,959	$3,460,074
Number of Providers*	705	704
Cost Per Provider	5,803	4,915
Field Audits** Vs. Total Settlements	251:253	257:270
Percent Field Audits	99%	95%

	FY 1980							
	New York	Buffalo	Albany	Syracuse	Utica	Rochester	Watertown	All New York State
Total Costs	$2,381,034	$325,192	$396,200	$329,193	$211,664	$145,033	$34,486	$3,822,802
Number of Providers*	283	123	84	71	87	75	10	733
Cost Per Provider	8,414	2,644	4,395	4,637	2,433	1,934	3,449	5,215
Field Audits** Vs. Total Settlements	122:133	38:38	26:27	20:20	24:29	17:17	3:4	250:268
Percent Field Audits	92%	100%	96%	100%	83%	100%	75%	93%

	FY 1979							
	New York	Buffalo	Albany	Syracuse	Utica	Rochester	Watertown	All New York State
Total Costs	$2,027,459	$282,066	$305,996	$308,559	$187,021	$135,350	$21,257	$3,267,708
Number of Providers*	279	122	82	71	87	75	10	726
Cost Per Provider	7,267	2,312	3,732	4,346	2,150	1,850	2,126	4,501
Field Audits** Vs. Total Settlements	127:139	41:41	26:29	20:20	24:30	17:17	3:4	268:280
Percent Field Audits	91%	100%	90%	100%	80%	100%	75%	92%

National Figures for all Intermediaries

	FY 1983	FY 1982	FY 1880	FY 1979
Total Cost	$80,938,740	$63,128,414	$60,556,318	$51,822,760
Number of Providers*	16,547	15,582	15,358	15,219
Cost Per Provider	4,891	4,051	3,943	3,405
Field Audits** Vs. Total Settlements	3,064:4,736	2,824:5,704	3,888:5,903	4,191:6,146
Percent Field Audits				

* Includes hospitals, skilled nursing facilities, and home health agencies.
** This is a measure of field audits to total settlements for hospitals only.

under the state's rate setting program. A similar favorable pattern applies to the level of audit effort when measured in terms of the intermediary's total audit cost per provider. In New York, audit cost per provider average $5,215 in FY 1980, $4,916 in FY 1982, and $5,803 in FY 1983. This again compares favorably with the national average level of effort of $3,405 in FY 1979, $3,943 in FY 1980, and $4,891 in FY 1983. We should note, however, that this latter ratio of audit cost to providers may be misleading as a level-of-effort indicator because the New York City area has very high costs of doing business. Pure regional inflation may account for much of the seemingly high level of effort in New York City. However, even allowing for this bias in the latter ratio, it is clear that no dramatic reduction occurred in the level of audit activity in New York following the award of a fixed-price contract.

In Missouri, it appears that an increase in auditing effort occurred under the fixed-price contract. This is illustrated in Table 3.8, which presents statistics on the level of auditing effort in Missouri before and after the fixed-price contract. In FY 1979, the cost-reimbursed intermediaries in Missouri had ratios of field audits to total settlements (66% for St. Louis, 60% for Kansas City) which were fairly close to the national average (68%). The pattern is even closer for FY 1980 (68% for each intermediary versus 66% nationally). (Note that these ratios of field audits were far below the experience in New York State where field audits are virtually universal.)

In FY 1982, the fixed-price contractor increased its ratio of field audits to 87 percent at a time when abatements in the Medicare program had reduced the national average to 50 percent. In FY 1983 its field audit rate increased to 93 percent while the national average increased to 65 percent.

Audit-cost-per-provider statistics also indicate no deterioration in the audit effort under fixed pricing. In FY 1979, St. Louis ($4,761) and Kansas City ($4,239) had higher audit costs than the national average ($3,405). This pattern is repeated in FY 1980 and again under fixed price in FY 1982 and FY 1983.

In summary, our review of some of performance measures collected by HCFA indicates that the fixed price intermediaries have performed within contract standards under their fixed price contracts. While performance has varied over time, the contractors did not appreciably change their performance after converting from traditional cost reimbursed contracts to fixed price contracts. To a large extent, this favorable performance is due to the fact that budgets for audit work were isolated from some of the other cost reductions experienced by the contractors. In New York, the contract price was negotiated rather than competed thus allowing ample opportunity to maintain audit resources. In Missouri, the RFP for the competition contained detailed requirements which left little room for diminution in the scope of work.

4.0 CONTRACT MODIFICATIONS IN THE NEW YORK AND MISSOURI EXPERIMENTS

This chapter describes how the two fixed price contracts in New York and Missouri have been amended in their first terms: May 1981 to April 1984 in New York, and July 1981 to June 1984 in Missouri.

Our basic finding is that HCFA has achieved a high degree of consistency in the manner in which contract changes and corresponding price adjustments have been allowed in both experiments. All the modifications conform to the specific provisions of both fixed price contracts and their is a high degree of similarity in the types of amendments allowed in both states. Where major differences are observed, as in the amendments involving governmental agencies in New York, they can be explained by unique factors extant in that state.

Our study did not include an evaluation of the reasonableness of the costs associated with these contract amendments. Such a study could not be performed because of the absence of specific cost data for similar activities performed by cost reimbursed intermediaries. Most of the costs and activities which required contract amendments for the fixed price contractors would not require contract modifications for cost contractors. Instead, they would be included in the annual (or supplementary) budget processes which all cost contractors undergo with their regional offices. Because various regional offices differ in terms of the amount of budget documentation they require and retain from intermediaries, it was not possible to gather comparable comparison data for cost contractors.[1]

Section 4.1 describes the contract amendments enacted during the first term of the New York contract. A detailed listing of these contract changes appears in Table 4.1. The amendments enacted during the first term of the

[1]A similar data gathering attempt was made regarding national abatement savings but proved fruitless after contacts with several HCFA entities.

Missouri contract are examined in Section 4.2 with a comparable listing appearing in Table 4.2. Our findings and conclusions concerning the contract modification process are summarized at the end of this chapter.

Overview

The fixed price contracts in New York and Missouri have required considerable modifications during their first terms. For the purposes of this study we have grouped the contract changes into four broad categories of amendments. The first category, special projects, include costs for activities outside the normal scope of work for intermediaries. This category of contract modification appears to be unique to the New York intermediary where a number of contract changes involving activities associated with state, county, and city agencies have occurred.

The second category of contract changes are those which are clearly mandated by legislation, such as the Omnibus Reconciliation Act and the Tax Equity and Fiscal Responsibility Act.

The third category of contract changes are those mandated by major changes in the scope of work which result from new or revised administrative policies of HCFA.[1]

The fourth category of amendments are those contract changes associated with specific provisions of the fixed price contracts which concerned price adjustments. These include those amendments resulting from postage rate increases in New York and Missouri and those associated with inflation costs and incentive payments in the New York contract.

[1]We are aware that some contract changes included in this group, such as HHA regionalization, resulted from legislative initiatives. However, unless the specific bill was cited in the amendment, they have been included in the third category for ease of reference in this study.

Table 4.1: New York Contract Amendments

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
Postage Rates			
1 (March 1981 to September 1981)	2-16-82		$ 54,300
6 (October 1981 to March 1982)	6-18-82		75,704
8 (April 1982 to June 1982)	10-1-82		13,273
11 (July 1982 to September 1982)	2-22-83		14,803
18 (October 1982 to March 1983)	10-19-83		29,816
23 (April 1983 to September 1983)	6-4-84		29,608
28 (October 1983 to December 1983)	7-20-84		12,703
		Subtotal	$230,207
Inflation (Exceeding 7%)			
2 (May 1981 to September 1981)	12-8-82		44,352
24 (October 1981 to September 1982)	5-7-84		175,369
		Subtotal	219,721
Incentive Payments (Contract Performance)			
3 (FY 1981 performance)	4-1-82		31,565
12 (FY 1982 performance)	8-2-83		285,556
25 (FY 1983 performance)	7-9-84		346,125
		Subtotal	663,246
Abatements			
7 (FY 1982 - projected savings)	10-1-82		(131,000)
10 (FY 1982 - additional savings)	2-2-83		(8,497)
18 (FY 1983 - October 1982 to March 1983)	10-19-83		(130,496)
23 (FY 1983 - April 1983 to September 1983)	6-4-84		(135,079)
		Subtotal	(405,072)

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
PSRO Defunding			
4 (FY 1981)	6-22-82		$ 10,259
5 (FY 1982 - October 1981 to December 1981)	6-18-82		20,389
8 (FY 1982 - January 1982 to June 1982)	10-1-82		20,661
11 (FY 1982 - July 1982 to September 1982)	2-22-83		11,550
18 (FY 1983 - October 1982 to March 1983)	10-19-83		23,840
23 (FY 1983 - April 1983 to September 1983)	6-4-84		28,797
28 (FY 1984 - October 1983 to December 1983)	7-20-84		13,020
		Subtotal	128,516
Omnibus Reconciliation Act of 1980			
4 (FY 1981)	6-22-82		13,053
5 (FY 1982 - October 1981 to December 1981)	6-18-82		3,767
8 (FY 1982 - January 1982 to June 1982)	10-1-82		1,826
11 (FY 1982 - July 1982 to September 1982)	2-22-83		488
18 (FY 1983 - October 1982 to March 1983)	10-19-83		1,132
23 (FY 1983 - April 1983 to September 1983)	6-4-84		5,251
28 (FY 1984 - October 1983 to December 1983)	7-20-84		498
		Subtotal	26,015
HHA Regionalization and Compliance Review Program			
8 (FY 1982 - October 1981 to June 1982)	10-1-82		9,873
11 (FY 1982 - July 1982 to September 1982)	2-22-83		3,149
18 (FY 1983 - October 1982 to March 1983)	10-19-83		18,057
23 (FY 1983 - April 1983 to September 1983)	6-4-84		18,549
28 (FY 1984 - October 1983 to December 1983)	7-20-84		(5,161)
		Subtotal	44,467

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
Long-Term Care Demonstration Project			
9 (October 1, 1981 to June 30, 1983)	10-1-81		$ 211,792
16 (July 1, 1983 to September 30, 1983)	7-7-83		35,882
21 (October 1, 1983 to April 30, 1984)	10-1-83		75,686
27 (May 1, 1984 to September 30, 1984)	5-5-84		61,709
		Subtotal	385,069
Contract Language Changes			
13 Provider Reimbursement Review Board	1-1-83		- 0 -
15 CREP Scores for Fiscal 1981 and 1982	9-2-83		- 0 -
		Subtotal	- 0 -
New York Department of Social Services			
14 (Outpatient services provided to Medicare beneficiaries)	9-2-83		9,671
New York City Health & Hospitals Corporation			
17 (Price adjustment for assuming intermediary responsibility for above)	11-2-83		616,420
Tax Equity and Fiscal Responsibility Act			
18 (October 1982 to March 1983)	10-19-83		2,240
23 (April 1983 to September 1983)	6-4-84		4,357
28 (October 1983 to December 1983)	7-20-84		29,480
		Subtotal	36,077
Hospital Cost Reporting Information System			
20 (FY '84 development and implementation costs)	10-20-83		221,980

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
Claims Storage Costs			
22 (FY 1983)	2-23-84		$ 3,780
28 (FY 1984 - October 1983 to December 1983)	7-20-84		1,260
		Subtotal	5,040
Control of Part A Hearings			
23 (FY 1983)	6-4-84		6,895
28 (FY 1984 - October 1983 to December 1984)	7-20-84		2,859
		Subtotal	9,754
New York Office of Mental Health			
26 (claims tapes processing project)	5-31-84		140,000
		TOTAL	$2,331,111

Table 4.2: St. Louis Contract Amendments

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
Postal Rates			
1A (July 1, 1981 to September 30, 1981)	8-18-81		$ 7,857
2 (October 1, 1981 to September 30, 1982)	10-1-81		31,435
8 (October 1, 1982 to September 30, 1983)	3-18-83		30,279
12 (October 1, 1983 to June 30, 1984)	5-2-84		22,710
		Subtotal	$92,281
Abatements			
5 (October 1, 1981 to September 30, 1982)	4-12-83		(108,776)
6 (October 1, 1982 to September 30, 1983)	3-18-83		(131,008)
		Subtotal	(239,784)
Contract Language Changes			
1 (Delegation of Project Officer)	6-1-81		- 0 -
3 (Changes in phone service, PSRO and audit)	10-1-81		- 0 -
4 (CREP scores)	10-1-81		- 0 -
7 (FY 1982 CPAP used for damage assessment)	10-1-81		- 0 -
9 (Delegation of DHHS authority for contract administration)	4-1-83		- 0 -
		Subtotal	- 0 -
Omnibus Reconciliation Act of 1980			
6 (October 1, 1982 to September 30, 1983)	3-18-83		42,869
11 (October 1, 1983 to September 30, 1984)	5-2-84		5,866
		Subtotal	48,735

Amendment Issues, Number and Period Covered	Effective Date		Price Adjustment
Uniform Hospital Bill (Form HCFA-1450) Implementation			
10 (October 1, 1982 to June 30, 1984)	7-7-83		$ 307,600
Hospital Cost Reporting Information System			
11 (October 1, 1983 to June 30, 1984)	5-2-84		18,900
Kimberly Services, Inc., National Home Health Chain			
13 (July to September 1983)	5-2-84		22,680
14 (October 1983 to June 1984)	5-2-84		26,558
		Subtotal	49,238
End Stage Renal Dialysis Facility Audits			
16 (October 1, 1983 to June 30, 1984)	5-23-84		55,980
Prospective Payment System Implementation			
16 (October 1, 1983 to June 30, 1984)	5-22-84		421,640
		TOTAL	$754,590

4.1 New York Contract Amendments

The New York contract has been amended 28 times during its first term--May 1981 to April 1984. Price adjustments resulting from these amendments totaled $2,331,111, about 5 percent of the base contract value. By far the largest group (in terms of cost) of contract changes in New York, representing over $1.4 million in additional funds, fall in the special projects category. These include the Long-Term Care Demonstration Project ($385,069); the New York City Health and Hospitals Corporation amendment ($616,420); the ACCESS project ($107,119); and the New York State Office of Mental Health processing project ($140,000).

The second largest group of contract changes in terms of cost in New York are those associated with the specific price adjustment clauses of the negotiated contract (category 4 above). These are the amendments associated with postage increases ($230,207); inflation rates in excess of 7 percent in fiscal 1981 and 1982 ($219,721); and the incentive payments awarded for superior performance in fiscal 1981, 1982, and 1983 ($663,246).

The next group of amendments, involving over $800,000 in price adjustments, are those associated with changes in the scope of work as a result of new or changed HCFA program policy. These include the program savings realized through HCFA's abatement policies in fiscal 1982 and 1983 (a contract reduction of $405,072); the development and implementation costs for the Hospital Cost Reporting Information System ($221,980); cost associated with PSRO defunding ($128,516); additional cost associated with increased claims storage ($5,040); and control of Part A hearings ($9,754).

The last and smallest category of contract changes in New York are those associated with specific legislation. Those include the costs to comply with

the Medicare provisions of the Tax Equity and Fiscal Responsibility Act ($36,077); and the Omnibus Reconciliation Act of 1980 ($26,015).

A complete listing of the New York fixed price contract amendments is provided in Table 4.1.

4.2 Missouri Contract Amendments

The competitively awarded Missouri contract is far less flexible than the New York contract in terms of price adjustment opportunities; correspondingly, there were fewer amendments. Price adjustments resulting from these amendments totaled $754,590 about 5 percent of the base contract value. Missouri had 15 contract amendments during its first term--July 1, 1981 to June 30, 1984, slightly more than half those in New York. As we observed in previous studies, Missouri, unlike New York, allows for no additional funding for costs associated with inflation or for incentive payments to encourage superior performance. The only price adjustments which were allowed under the specific provisions of Missouri's contract were for postage rate increases in fiscal 1981, 1982, 1983, and 1984 ($92,281).

All the remaining contract changes in Missouri fall into either category 2 (legislation) or category 3 (HCFA policy). Missouri had no amendments which could be included within our definition of category one (special projects).

Under category 2 (legislative mandated changes), $48,735 in additional costs were allowed to comply with the Medicare provisions of the Omnibus Reconciliation Act in fiscal 1983 and 1984.

The remaining contract changes in Missouri all fall within the group of major changes to the scope of work resulting from new or revised HCFA policy (category 3). These contract changes involved over $1 million in price adjustments and include: the Prospective Payment System Implementation

($421,640); the Uniform Bill Form Implementation ($307,600); program savings realized through the abatement process in fiscal 1982 and 1983 (a reduction of $239,784); costs associated with implementing the Hospital Cost Reporting Information System ($18,900); additional funding for servicing a national home health agency chain ($49,238); and for auditing end stage renal dialysis facilities ($55,980).

Table 4.2 contains a complete listing of the Missouri amendments during the first term of the contract.

Conclusions

- **All amendments conform to the specific provisions of both fixed price contracts.** We note here the price adjustments for postage expenses allowed in both contracts and the additional payments for inflation costs and superior performance in only the New York contract.

- **There is a high degree of similarity in the types of other amendments allowed in both contracts.** Here we note price adjustments in both contracts for the Omnibus Reconciliation Act, the Hospital Cost Reporting System, and the program savings realized through the abatement process.

- **Unique factors in New York State** such as its dense population and innovative reputation in government health programs administration, probably explain the high amount of category 1 (special projects) amendments in that state.

- **The reasonableness of costs associated with the amendments cannot be determined** because similar information is not available from cost contractors.

5.0 METHODS FOR FUTURE FIXED PRICE EVALUATIONS

This chapter discusses methods which the Health Care Financing Administration may use to evaluate the performance of contractors who serve as Medicare carriers and intermediaries. Special emphasis is given to evaluating those contractors who operate under non-traditional contracts such as those that involve fixed price reimbursement or competitive awards.

Recent legislation makes it necessary for HCFA to reexamine its methods for selecting and reimbursing its contractors. During the first decade of the Medicare program, all contractors operated under cost reimbursed non-profit contracts which the government awarded at its discretion to qualified firms. Since 1972, the government has had limited authority to experiment with fixed price contracts awarded on a competitive basis. Under the Deficit Reduction Act of 1984, HCFA now has further authority to competitively award up to eight contracts (two per year in fiscal years 1984 and 1985 in both Part A and Part B) to replace any current contractor "who over a period of time has been in the lowest 20th percentile ... as measured by the Secretary's cost and performance criteria"

This increased responsibility to undertake competitive procurement (it is not clear at present if the eight contracts just mentioned are to be awarded on a fixed price or a cost reimbursed basis) requires that HCFA prepare to evaluate their outcomes. HCFA has begun to acquire experience in the evaluation of non-traditional contracts. The agency has recently completed a contract for the evaluation of its Part B fixed price experiments. An evaluation of competitive fixed price contracting for laboratory services is in progress.

Essential materials for future evaluations are available to the research community. HCFA has maintained statistics on contractor cost and performance

which have become increasingly more comprehensive and sophisticated in the two decades that have passed since the start of the program. Most notable was the implementation in 19780 of the Contractor Performance Evaluation Program (CPEP) which evaluates contractors according to a well defined set of criteria and awards numerical scores for performance in several categories. A subcomponent of of this program known as the Cost Report Evaluation Program (CREP) judges the performance of Part A Intermediaries in auditing provider cost reports.

Under its new contracting authority HCFA will have to conduct two types of evaluation activity. The first is contractor monitoring that is, the examination of an individual contractor to determine if it is fulfilling the individual requirements of its contract. The second is contractor comparison that is, systematic comparisons over time among contractors to determine if particular types of contractors (e.g., those with large claims volume), contracts (e.g., fixed price), or methods of procurement (e.g., competitive) perform differently from the typical cost reimbursed contractor.

Both contractor comparisons and contractor monitoring are directed toward the goal of testing three fundamental hypotheses. These are:

- Hypothesis 1: Competitive and/or fixed price contracts result in lower cost to the government in the administration of the Medicare program.
- Hypothesis 2: These contracts yield work of acceptable quality, namely accurate and timely payments of Medicare benefits.
- Hypothesis 3: These contracts produce favorable results both immediately and in the long run.

In stating these hypotheses, we leave open the issue of the relative importance of the method of awarding contracts (competitive vs. sole source negotiation) and the method of paying for contract work (fixed price vs. cost reimbursement). The government really has four options available to award and

pay for contracts. Hypothesis testing should be sensitive to these possibilities.

In the remainder of this chapter we discuss more fully these evaluation issues and hypotheses. Section 5.1 explores topic areas which should be included in an analysis of fixed price or competitive contracts. The section considers the relative difficulty of examining the various topics and which methods of analysis are most likely to be successful. Section 5.2 discusses statistical analyses that are appropriate for those topics that are amenable to rigorous quantitative analysis. Section 5.3 discusses some technical issues relating specifically to the measurement of a contractor's qualitative performance.

5.1 Evaluation Topics

The Medicare fixed price experiments have been characterized by the following departures from traditional cost reimbursed contracts:

- Payment is limited to the total fixed price of the contract. This price may be adjusted only for government initiated changes in the scope of work and some inflation adjustments (e.g., postal rates) The contractor's actual costs are not a basis for reimbursement. The contractor incurs a profit or a loss depending on whether actual costs are respectively less than or greater than the fixed price.

- Contractors are at risk for liquidated damage payments (i.e., a reduction in the fixed price) in the event of inadequate performance. A detailed monitoring plan is used to measure contractor performance.

- Incentive payments have been allowed in three of the seven fixed price experiments that have been conducted to date. (These are the New York Part A contract, and the Maine II and Illinois II Part B contracts.) Contractors whose performance exceeds a certain standard receive an additional payment prorated on the fixed price.

A major obstacle in determining why some contractors have submitted low bids (judged by historical standards) and whether or not these contractors

have incurred losses on their contracts is the inaccessibility of data concerning contractor overhead expenses. HCFA's main budget document for Medicare contractors is HCFA Form 1616. This document and its backup, the Detailed Schedule of Costs and Credits, are essentially spreadsheets which break out functional area costs (e.g., data entry, claims review, provider relations, etc.) by types of expense (rent, travel, postage, telephone, wages and salaries, etc.). These forms are useful for comparing contractors in terms of their total costs by functional areas. However, they do not contain detail which distinguishes the general overhead expenses of the parent organization from the direct costs of the Medicare project.

HCFA's method for tracking Medicare contractor expenses is quite different from the method that many federal agencies use to track the expenses of research contractors who work for the agency on individual projects. It would be helpful for evaluation of Medicare contractors to routinely report their costs in a format similar to that used by the research contractors, which identifies an overhead rate as a proportion of contract expense. Research contractors report their costs on Standard Form 1411 which clearly distinguishes parent corporation overhead expenses from the direct costs of the research project. Form 1411 distinguishes five types of expense (i) labor, (ii) fringe benefit rate, (iii) overhead rate (e.g., rent, salaries of corporate officers, travel, telephone, subcontractors), (iv) general and administrative expense (G&A), and (v) fee (i.e., profit). In this reporting format, it is quite easy to distinguish organizations with high overhead expenses from those with low overhead. This is done by comparing the overhead and the G&A rates of different contractors.

HCFA's ability to monitor its Medicare contractors would improve if it adopted the practice of reporting the percentage of a Medicare contractor's

expenses that were attributable to general corporate expenses such as the salaries of senior executives, the corporate payroll department, security services, the public relations department, central switchboard operations, and the like. There is very little evidence that cost accounting rules of thumb do a very good job of allocating these costs to projects in proportion to true economic costs.

In evaluating the fixed price experiments, one wishes to determine if contractors submitted historically low bids because they made major changes in internal operations that improved efficiency or because they internally reallocated overhead expenses such as rent, senior corporate management salaries, payroll department, and so forth. Our case studies reveal that both types of savings have been achieved on various occasions. (In the Upstate New York Part B experiment, the contractor found a less expensive way of operating by moving from Buffalo to Binghampton; in the Missouri Part A experiment, reallocation of corporate overhead seems to have been an important factor.) By placing more emphasis on identifying general corporate overhead expenses in a easily compared format (i.e., an overhead rate), HCFA could better determine which of these situations is the more likely occurrence.

Such a determination would have important implications for the Medicare program. If low bids mean that contractors can find more efficient methods of production when they are offered competitive incentives, then the Medicare program should embrace competition more widely to reap these benefits. If low bids mean that contractors do not consider Medicare's accounting rules to allocate overhead in keeping with actual economic costs, then Medicare has the option both of embracing more competition and of revising its accounting rules for noncompetitive awards.

Evaluation of future fixed price experiments should accordingly focus on the importance of these unique features as well as any other new incentives or penalties that may be subsequently added. We will now discuss methodological problems which arise in performing such an evaluation.

One complication in evaluating previous fixed price experiments has been that it was difficult to determine which of their features have been more important in contributing to their successes or difficulties. For example, competitive selection of contractors has occurred in six of the seven fixed price experiments. Sites chosen for these competitions have also generally had incumbent cost reimbursed contractors whose performance was deficient. Consequently, it was difficult to determine if improved performance by the successor fixed price contractor reflects the benefits of competitive procurement, fixed price reimbursement, liquidated damages, incentive payments, replacement of deficient contractors, or some combination of all of these treatments.

One approach for disentangling these issues would be for HCFA to standardize its package of liquidated damages and incentive payments and concentrate its efforts on determining whether or not a particular type of contract encourages clearly superior performance. Under this approach, HCFA would have to select for competition and/or fixed price procurement some sites where incumbent contractors have been performing satisfactorily. Improvements in performance at these sites, subsequent to the introduction of competition or fixed price, would be strong evidence that these methods of contracting are effective at promoting better performance.

While the selection of some "good" sites for experimentation would make the evaluation task much easier, we recognize that future experiments may continue to occur at sites characterized by poor performance. Since this case

is the more difficult one for evaluation, we will assume in our following remarks that this is the situation which an evaluator must confront.

It appears unlikely that statistical methods will be able to disentangle the relative importance of the various site features because there are so few sites with so many similar features. (That is, there is perfect collinearity across sites.) The best approach seems to be to complement statistical analysis with in depth interviews with parties who participate in the experiments (e.g., bidders, nonbidders, former incumbents) as a guide in determining what aspects of a procurement caused the greatest concern for the participants. For example, it was clear in our interviews with the early Part B experiments that bidders were very concerned about the very limited adjustments that would be allowed for national inflation trends. In later experiments adjustments for some inflation categories were more liberal with the result that bidders were less fearful.

The focus of hypothesis testing should be to see if the competitive fixed price contractors have performed better than some other contractor who might have served the same service area (as is the case with the geographic territories of Part B) or the same group of providers (as is the case with the intermediary election process of Part A). The notion of "some other contractor" has several possible interpretations. These include:

- The previous incumbent contractor under a cost reimbursed contract. (This may have been the current fixed price contractor.)
- Contractors of the same size.
- Contractors in regions with similar levels of input prices.
- Contractors in geographically proximate areas who might have expanded their operations to take over the territory under examination.

Multivariate statistical methods, especially the pooling of time series and cross sectional data in a regression, seems to be the best approach for exploring these types of contractor comparisons. We discuss this approach further in the next section.

Any tests of the three fundamental hypotheses should also be sensitive to the historical trend of the Medicare program toward achieving lower cost and higher productivity. In 1968 Medicare Part A bills were processed at an average cost (in 1981 dollars) of $8.88 per bill. In 1981 the cost had fallen to $5.49. It is consequently not enough to simply show that competitive fixed price contractors reduced their costs or improved their performance relative to the previous cost reimbursed contractor. Rather one must show that the new contractor continued -- or better yet improved -- the historical trend. Continued advances in the technology of claims processing have accounted for this favorable historical pattern and it appears likely that the pattern will continue.

Examination of cost reductions also has to consider if both the government and the contractor achieved cost reductions. In the fixed price competitions to date, the government has generally obtained a lower cost per claim than it had paid previously under a cost reimbursed contract. Contractors have also taken major steps to reduce their operating costs by moving their location or by upgrading their computer system. In spite of these cost reducing activities, contractors have claimed that they "lost money" judged by a comparison of what the government paid under a fixed price contract to what the government would have accepted as allowed compensation under a traditional cost reimbursed contract.

This discrepancy is open to two interpretations. First, the government's methods of reimbursing contractor overhead on cost reimbursed

contracts may be fairly generous in the sense that it pays the contractor's average cost of production rather than its (presumably lower) marginal costs. The pressure of competitive fixed price contracting may simply have forced contractors to offer the government a price which reflected a lower allocation of its overhead. The second interpretation, of course, is that a winning contractor bid too low a price (either by accident or in an attempt to win business in the short run).

We believe that the major focus of an evaluation of fixed price contracting should be on the costs incurred by the government. Nonetheless it is important to determine in what sense contractors may lose money under such contracts.

Another issue related to the examination of contractor costs are those cost associated with contract modifications. Fixed price contracts are never entirely fixed in terms of either price or the scope of work because the Medicare program itself is constantly changing in its benefits, eligibility, and administrative procedures.

A comprehensive analysis of fixed price contracting should also try to compare the costs of contract modifications negotiated under fixed price contracts with those enacted under traditional cost reimbursed contracts. This should be done to determine if fixed price contractors who submitted low initial bids subsequently use the contract modification process to enhance their revenues.

HCFA's internal data systems currently do not permit a comprehensive analysis of this issue. While data are readily available on modifications requested by fixed price contractors, there is no corresponding data for cost reimbursed contractors. This occurs because cost reimbursed contractors do not submit formal modification requests in the same way as do fixed price

contractors. With present data, the best approach for analyzing this issue is to simply compare the total cost of a fixed price contractor -- including the costs of modifications -- with the (final end of year) costs of traditional contractors. This approach will at least determine if the fixed price contracts inclusive of their modifications are less costly than traditional contracts.

A further evaluation issue is that of identifying any tradeoffs which occur in Medicare administration between cost and the quality of service. The reason for doing this is to determine if administrative cost reductions have adverse impacts on the accuracy of benefit payments or the frequency of fraud and abuse. Our previous research has shown a favorable relationship between increased contractor cost and benefit payment levels. This apparently results when additional effort is directed toward post utilization review and prepayment screening.

Quality of service can be defined objectively in terms of the speed and accuracy of claims payment. It can also be defined more subjectively in terms of the satisfaction which beneficiaries and providers derive from dealing with the program. Speed and accuracy of payment should be highly correlated with the satisfaction of program participants. However, a perfect correlation is not likely to occur because program participants may be dissatisfied with the program for reasons that have little to do with the performance of the carrier or intermediary. These reasons include confusion over the benefits and procedures of what is a very complicated program as well as disappointment over the level of the benefits themselves.

We believe that the main effort of evaluating the quality of service of fixed price contractors should be directed at comparing their speed and accuracy with that of traditional contractors. However, some effort should be

made from time to time to see how well these objective measures coincide with the subjective views of program participants. (This is especially true in the Part B program where beneficiaries are much more directly involved in the claims submission process.) Some of the evaluations of fixed price contractors should therefore include a survey aimed at eliciting the views of beneficiaries and providers about the Medicare program and the quality of service offered by Medicare contractors.

The administrative costs of the Medicare program include not only the costs of contractors but also the internal administrative cost of HCFA. Most relevant to competitive procurement and fixed price contracting are the costs of preparing a Request for Proposal and determining the winner of the competition, supervising the contractor and assessing its performance. A comprehensive evaluation of fixed price contracting and competition should also examine these costs. HCFA's internal data system does not presently allow for a comprehensive analysis of this issue. The only feasible approach at present is to ask the HCFA regional and central offices to estimate the amount of staff time which they spend on each type of contract. This approach has not been entirely reliable because it has required an ad hoc estimate of the amount of effort that went into work that was performed one to three years prior to the evaluation.

Our third major hypothesis is that savings achieved by a fixed price competition will continue over time. These are two ways in which we might define this notion of the substainability of results:

> Absolute Advantage - The fixed price contractor consistently has better performance than other contractors of similar size.
>
> Relative Improvement - The fixed price contractor continues to perform better than the previous incumbent in terms of its ranking relative to other contractors. However, the fixed price contractor does not necessarily surpass the performance of all of its peers.

The first notion ("absolute advantage") is much stronger than the second ("relative improvement"). We could, in principle, distinguish these two results if an evaluation looked at a time series of data which extended several years beyond the initiation of the experiment. In practice, an evaluator will not have so much data available. This means that any statistical analysis of a contractor's performance subsequent to a fixed price contract will have to be supplemented by on-site examination.

One of the best indicators of the substainability of results would be evidence that the fixed price contractor made fundamental changes in its methods of production relative to the previous incumbent. Fundamental changes would include:

- implementation of a technically superior claims processing system;
- relocation of the main claims processing site to an area with lower wage and rental costs;
- streamlining of the chain of command in supervisory and senior management personnel; and
- reduction in the size of the labor force.

It is extremely unlikely that a fixed price contractor could continue to outperform a previous incumbent without making some of these types of changes.

If none of these changes occur (or if they occur to only a limited degree), then it is likely that the fixed price contractor reduced its costs relative to the previous incumbent by simply bidding a price which includes a smaller portion of its general corporate overhead. This type of price reduction might be sustainable in the long run provided that the parent organization is willing and able to accept a lower contribution to overhead from its Medicare line of business. In this latter situation, the evaluator should conduct a detailed interviews with the management of the fixed price

contractor to determine if corporate accounting practices and pricing philosophy have been changed as part of a long run program.

As we have just indicated, only a portion of the research issues raised by an evaluation of fixed price contracting will be susceptible to rigorous quantitative analysis. Issues that can be analyzed include an analysis of the overall costs of claims processing and an analysis of how a contractor's performance may affect benefit payments. We turn now to a more detailed discussion of these issues.

5.2 Statistical Tests

The main statistical approach which we believe should be used in evaluating the performance of fixed price contractors is pooled time series cross section regression analysis. This approach permits comparisons among all contractors over a period of time. The performance of fixed price contractors can be discerned by jointly comparing them with their current peers and with previous contractors who served the same providers or territories.[1] This method of analysis has proven to be successful in Abt Associates' evaluations of the fixed price contracts to date. Future use of this method will permit continuity in the evaluation process.

The basic approach which we recommend is to estimate two equations which respectively examine variation in cost per claim and benefit payments. The cost per claim equation should consider how variation in cost is related to variation in (i) regional input prices, (ii) size of the contractor's workload, (iii) speed and accuracy of claim payment, and (iv) the presence of

[1]Since there is already a large scientific literature devoted to this estimation procedure, we will not describe it in detail here. See Jerry Hausman and William E. Taylor, "Panel Data and Unobservable Individual Effects" Econometrica 46(6):1251-1272.

fixed price and/or competitive contracts. In equation form this is:

Cost per claim = f(input prices, claims volume, speed, accuracy
fixed price/competition, time)

The second equation should consider how benefit payments are related to (i) contractor administrative costs, (ii) volume, (iii) speed and accuracy of claims processing, (iv) audit activities (for Part A contractors), (v) utilization review, (vi) characteristics of the providers and beneficiaries, and (vii) presence of fixed price and/or competitive contracts. In equation form this is:

Benefits = f(cost, volume, speed, accuracy, audit, utilization review,
time, provider characteristics, beneficiary characteristics,
fixed price/competition)

The benefit equation is particularly difficult to model because appropriate data are not easily obtained and there is some ambiguity about how variables should be defined. The issue is to determine if contractors pay out more (or less) benefits when they reduce their administrative costs and whether or not such a change in payment levels is consistent with Medicare payment rules. To explore this issue we need a way to control for claims volume, casemix, and variation in the level of payment which Medicare allows across areas. Unfortunately, there is very little information reported at the contractor level which allows for a sophisticated treatment of these concepts. The best approach at present seems to be to normalize Part B payments on a "per enrollee" basis and to normalize Part A payments on a "per provider" basis. (This normalization differs because Part B contractors serve territories which have a more or less well defined population of beneficiaries while Part A contractors serve those providers who have elected them.)

In both of these equations, the effects of fixed price contracts is determined by using a dummy variable which is set equal to 1.0 when a fixed price contract is in effect and set equal to zero otherwise. For example, in

the cost equation we would expect the coefficient of the dummy variable to have a negative sign to denote that costs were reduced when fixed price contracts were present. (It is also desirable to include in the equation another dummy variable which represents the site where the fixed price contract was awarded. The site dummy is interpreted as a level of baseline costs prior to the enactment of the fixed price contract. The difference between the coefficient for the fixed price dummy and the site dummy represent the difference in cost attributable to the presence of fixed price.)

The coefficient of the fixed price dummy variable in the cost equation should be negative (to denote a reduction cost compared to the previous incumbent) and large enough to exceed the savings that might have been expected from simply replacing the incumbent with another of adequate performance. A negative but small coefficient on the dummy would denote a small cost savings; such a result would be one piece of evidence suggesting either that fixed price contracts have a small effect or that the main benefit of the experiment was simply one that resulted from replacing the incumbent contractor.

Our inclusion of a time variable in the specification is an additional factor which should aid in differentiating the effects of fixed price from the effects of simply replacing one contractor with another. In the cost equation, the time variable(s) should measure the trend towards lower administrative cost which has been the historical experience of the Medicare program. By controlling for time effects in this way, we can have greater confidence in interpreting the dummy variables for fixed price as being indicators of the success of the experiment. (An even better approach would be to interact the fixed price dummy with the time variable. For example, one could define a separate dummy for the fiscal year of a fixed price contract,

another for the second year, and so on. Consistently negative signs on the dummies would indicate that the fixed price contractor consistently exceeded the performance of other contractors.)

Data appropriate for use in this statistical analysis are generally available in a variety of HCFA reports. The most serious problem in working with these data is that some data elements are reported on a monthly basis, others on a quarterly basis, and still others only annually. The monthly and quarterly variables are often not reported on an annual basis. Evaluation work to date has required a considerable amount of data reconciliation before multivariate statistical analysis could begin. It would consequently be very helpful if HCFA adopted the policy of reporting its various contractor performance statistics on an annual basis in addition to whatever quarterly or monthly breakdowns it requires for its own administrative uses.

It would also be helpful for future evaluations if HCFA were to routinely collect information on prevailing wages and prices in the areas in which the contractors operate. The issue here is not to measure the wage rates or rental expenses of the contractors themselves, but rather the prevailing prices in their regions. HCFA currently collects very little information on this issue. This makes it difficult for HCFA or its evaluation contractors to compare the costs of its carriers and intermediaries after adjusting for variation in local wages and prices.

In summary, we believe that future evaluations of fixed price contracts should continue to use the methodology that we have applied to the evaluation of recent Part A and Part B fixed price contracts. Such evaluations should combine quantitative statistical analyses with the insights that can be gained from case studies of the experimental sites. One of the most essential ingredients of such evaluations will be an accurate and conceptually useful

measures of the quality of a contractors performance. HCFA already has in place a useful system for this kind of measurement and evaluation in its CPEP. The following chapter discusses some technical issues related to refining the CPEP system.

5.3 Technical Issues in Measuring Performance

In the previous chapter we discussed a broad strategy for evaluating fixed price contractors (or contractors with other non-traditional or competitively awarded contracts) relative to traditional cost reimbursed contractors. In this chapter we discuss some technical issues relating to how HCFA measures the speed, accuracy, and efficiency of its contractors by means of the Contractor Performance Evaluation Program (CPEP).

A system already exists in Medicare, which, with a few adjustments, can be used to evaluate the performance of both fixed price and cost reimbursed. This is the Contractor Performance Evaluation System.The CPEP is a comprehensive system of review and appraisal in which the total performance of Medicare contractors is evaluated annually by HCFA's regional offices. Under CPEP, contractors must meet specifically defined functional requirements mandated by the Medicare agreement, regulations and general instructions, and certain statistical measures of cost and timeliness of processing. The evaluation system is based on the application of specific performance criteria which measure whether or not the basic functional requirements have been fulfilled and on statistical standards which measure the cost effectiveness and timeliness of contractors' operations. The CPEP reviews and findings form the basis for the Annual Contract Evaluation Report (ACER) in which HCFA assesses the overall performance of a contractor at the close of each fiscal year. CPEP is designed to measure the quality of an intermediary's perform-

ance through what is know as the functional area criteria; it also measures efficiency of an intermediary's operations through what is known as statistical standards. CPEP is both comprehensive, in that it evaluates all aspects of a contractor's operation, and uniform, in that the same sampling techniques, scoring methodology and performance standards can be applied to all types of contractors.

One characteristic of CPEP which is both a strength and weakness for fixed price monitoring purposes is its flexibility. Because of this flexibility, CPEP can be used to compare and contrast fixed price versus cost performance and, at the same time, it can serve as the methodology for assessing liquidated damages and/or incentive payments for fixed price contractors. Indeed, HCFA adjusted the CPEP performance criteria and statistical standards in the New York and Missouri contracts to achieve this exact purpose.

The weakness in CPEP's flexibility is that because some of its scores and standards may change from year to year, contractors will be reluctant to commit themselves to damages and incentives based on unknown (at bid or contract negotiation time) standards. Such a situation occurred in the Maine II Part B procurement where the winning bidder delayed for months signing a formal contract because of uncertainty about the evaluation methodology for assessing liquidated damages. The solution to this problem would appear to be the approach taken by the Kansas City Regional Office in a later procurement whereby St. Louis Blue Cross is evaluated against a modified version of the fiscal 1982 CPEP for liquidated damages assessment while it is evaluated against the current fiscal year's CPEP for comparison with other contractors.[1] We will have more to say about this problem in the following section.

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[1]The New York City Regional Office also uses a modified fiscal 1980 CPEP to determine liquidated damages and incentive payments but does not evaluate BCBSGNY against current CPEPs for comparison purposes.

In recommending a fixed price evaluation methodology designed around CPEP scores, we recognize we are affirming an approach which HCFA has already adopted. Both of the fixed price monitoring plans in Part A (New York and Missouri) and all of the most recent ones in Part B (Maine and Illinois) are based on CPEP. However, while we agree with the general approach which HCFA has taken to date, we think certain modifications could be made which would enhance CPEP's ability to evaluate fixed price performance for damages and incentives and to concurrently compare that performance to cost contractors.

One problem with CPEP which hinders direct comparisons of numerical scores between fixed price and cost contractors is the presence of several performance criteria and one statistical standard (adjusted unit cost per bill) which don't apply to fixed price contractors. For comparison purposes, it is desirable to normalize the CPEP score of a fixed price contractor to adjust for these missing elements. Examples of performance criteria (from fiscal 1982 CPEP) not applicable to fixed price contractors are the Functional Area IV: Fiscal Management Criteria relating to (A) equitable administrative expenses; (B) budget proposals; and (C) control administrative funds. On way to normalize the fixed price contractor's score would be to award points for these criteria in proportion to those earned on other criteria either within the same functional area or in all functional areas. Thus, using the FY 1982 CPEP as an example, if the fixed price contractor received 98 percent of the total possible score for criteria D (Letter of Credit) and E (Accurate and Timely Financial Reports), it would receive 98 percent of the total possible score for the non-applicable criteria also. If in later CPEPs, all the criteria within a functional area are non-applicable to fixed price contractors, points for these criteria could be awarded in proportion to the contractors'

total functional area scores. Either method would ensure compatibility between the numeric scores of both types of contractors.

When reporting normalized scores for comparison purposes, we also believe it would be helpful to include the Adjusted Unit Cost Per Bill, in the score of fixed price contractors. Like their cost reimbursed peers, the cost per bill of fixed price contractors is the ratio of total administrative costs (less audit and reimbursement, nonrecurring PSRO and HMO costs) to total bills processed. It is thus a useful measure of efficiency and it should be reported in a normalized score. Probably the main reason this standard is not currently applied to fixed price contractors is the question of whose costs are to be measured. Should cost be measured as the amount of fixed price contractor reports on its Final Administrative Cost Proposal (FACP) or should it be the fixed amount of reimbursement bid by the contractor for the year? The former amount is the cost to the contractor with overhead allocated to Medicare under standard accounting rules. The latter is the actual cost to the government. For reasons of both comparability and equity, we suggest that the latter amount be used in developing a normalized CPEP score. In the vast majority of cases, the amount reported by cost contractors on the FACPs represents the amount of reimbursement they receive from the government. Of course, the FACP figures are subject to government audit (usually years later) and disputed amounts are negotiable. Usually, however, these amounts are small in relation to total reported cost and have little or no impact on the unit cost per claim. Thus, with very few exceptions, the FACP cost of cost reimbursed contractors <u>is</u> the cost to the government.

As for the other statistical measures, we propose that some be changed and others added to provide a broader measure of the efficiency of an intermediary's total operations. Table 5.1 contains our recommendations for an

Table 5.1: Proposed Statistical Standards Indicators

I. **ADJUSTED UNIT COST PER BILL**

II. Bill Workload

A. Average Processing Times

1. Inpatient
2. Outpatient
3. SNF
4. HHA

B. Days Work on Hand Over 30 Days

1. Inpatient
2. Outpatient
3. SNF
4. HHA

C. Bill Error Rate (Utilization)

1. Inpatient
2. Outpatient
3. SNF
4. HHA

III. **PROVIDER AUDIT**

A. Timeliness of Cost Report Settlement - Last Fiscal Year Reports

1. Hospital
2. SNF
3. HHA

B. Timeliness of Cost Report Settlement - Next to Last Fiscal Year Reports

1. Hospital
2. SNF
3. HHA

VI. **INQUIRIES AND APPEALS**

A. Average Processing Times

1. Correspondence
2. Reconsiderations

B. Percent Pending Over 30 Days

1. Correspondence
2. Reconsiderations

expanded statistical indicators package. Note that we have made some significant changes in the indicators from those used in the most recent CPEPs. In the Bill Workload area, we recommend that the timeliness standard be based on average processing times for the four types of bills instead of the present Processed Within 30 Days and 60 Days or Less measures. We propose this change because of the small variation in scores which have been achieved recently by contractors using the latter measure. For example, in the FY 1983 CPEP, 33 of 71 intermediaries had scores in the 99th percentile for Inpatient Hospital Claims-Percent Processed in 30 Days or Less. More than 50 scored above 98 percent and only one contractor scored below 90 percent. The same trends can be seen in the outpatient, SNF and HHA bill categories, suggesting to us that these measures have lost their ability to distinguish between acceptable and outstanding performance. We think that by substituting average processing times, HCFA would see a wider array of scores and be in a better position to differentiate between levels of processing efficiency.

Continuing under Bill Workload, we suggest the addition of two other indicators which to date have not been included in the statistical standards. The first is Days Work on Hand Over 30 Days, which we believe is important to measure the amount of aged bill backlog. This indicator in a sense compliments the timeliness measure by dissuading a contractor from processing its easiest claims first and accumulating a backlog of aged difficult claims. The other measure is the Utilization Error Rate which indicates the percent of bills with inaccurate beneficiary identification and/or coverage discrepancies. This measure compliments both the timeliness indicator and the bill processing criteria in the functional area scores. It is one thing to process a claim rapidly, it is another to process it accurately.

Concerning the Cost Report Settlement timeliness indicators, we are not recommending any changes at this time because of the ongoing implementation of the prospective payment system. At some future time the hospital category may have to be eliminated from the standards or reweighted to reflect the fact that audit work is less important in a world where reimbursement rates do not depend on a hospital's actual cost. However, as long as audits are viewed as valuable to the Medicare program, if an effective substitute measure of a contractors' hospital reimbursement efficiency can be developed, it should be included in a future statistical standards package. Some thought should be given to continuing the Cost Report Evaluation Program (CREP), extending its scope to cover SNFs as well as HHAs and including a composite CREP score in the statistical standards area, as was done in fiscal 1983 CPEP.

In addition to the above changes, we think a third category of performance which measures the efficiency of correspondence and reconsideration processing should be included in the statistical standards. While inquiries and appeals don't constitute a large portion of most contractors' workload, they do influence how the beneficiary and provider communities perceive the Medicare program. Correspondence and reconsideration therefore should be monitored for speed of response (in the statistical area) as well as accuracy of response as evaluated (in the functional area).

We also suggest the need for devising an overall CPEP composite score by which the total performance of all contractors can be readily compared. Developing this composite entails assigning of weights to the functional and statistical areas and their respective criteria and indicators. Although HCFA has yet to develop an overall CPEP weighting scheme applicable to all contractors, it implicitly developed the weights for an appropriate score when it designed the evaluation methodologies for liquidated damage assessment in the

New York and Missouri contracts. A brief look at the results of its efforts may provide some insight into how CPEP weights may be distributed if a composite scoring system is developed.

Table 5.2 shows the relative values HCFA assigned to the functional and statistical areas in the New York and Missouri monitoring plans. Also included in the table is the percent of total contract price which could potentially be assessed against the contractor for substandard performance in the areas. In both contracts, HCFA assigned 75 percent of the total possible damages to the functional areas and 25 percent to the statistical areas, suggesting an emphasis on qualitative rather than quantitative performance. Within the functional areas it is interesting to note the different weights assigned to the same area by the two contracts. Both contracts applied the largest weights to Provider Reimbursement and Bill Processing and were both fairly close in Beneficiary Services and General Administration. It is difficult however to understand the weight given to Fiscal Management in New York in view of the limited criteria within the area which apply to fixed price contractors. In the statistical area, the Missouri contract emphasized claims processing over cost report settlement while the reverse was true in New York.

One thing to remember in looking at the three to one spread between the functional and statistical areas is that an important indicator HCFA applies to cost contractors, Adjusted Unit Cost Per Claim is missing from the monitoring plans. It is hard to imagine the same ratio being maintained between the two areas if this indicator is included within the statistical area. It seems reasonable to assume that the triad of quality (functional area), efficiency (statistical area) and cost (unit cost per claim) would receive equal weight in a composite scoring system. If this assumption is

Table 5.2: Values of Liquidated Damages and incentives in Missouri and New York Contracts

	LIQUIDATED DAMAGES				INCENTIVE PAYMENTS	
	Missouri		New York		Missouri	New York
A. FUNCTIONAL AREAS	% of Contract Price	Weight Within Area	% of Contract Price	Weight Within Area	% of Contract Price	% of Contract Price[a]
1. Bill Processing	2.25	30%	0.60	20%	0	--
2. Provider Reimbursement	2.625	35%	0.96	32%	0	--
3. Beneficiary Services	1.125	15%	0.48	16%	0	--
4. Fiscal Management	0.600	8%	0.48	16%	0	--
5. General Administration	0.900	12%	0.48	16%	0	--
Subtotal	7.5	100%	3	100%	0	1.5
B. STATISTICAL STANDARDS						
1. Timeliness of Claims Processing	1.285	51%	0.47	47%	0	--
2. Timeliness of Cost Report Settlement	1.215	49%	0.53	53%	0	--
Subtotal	2.5	100%	1	100%	0	0.5
TOTAL	10	--	4	--	--	2

[a]Percentages cannot be spread in New York because incentive payments are awarded within the Functional Areas based on the percent of criteria exceeding the starting scores and within the Statistical Standards Area based on a composite score. In addition, contract states: "no incentive payments will be made for exceeding the criteria performance levels unless each and every criterion is passed and a passing score is achieved by the plan for statistical standards. No incentive payments will be awarded for exceeding statistical standards unless each and every criterion is passed during the review period."

accepted, then the weighting system would look something like that depicted in Table 5.3 below. Here the weights assigned within the functional and statistical (except the unit cost indicator) areas reflect the average values HCFA applied to these areas in the Missouri and New York contracts. The functional and statistical configuration is from the fiscal 1982 CPEP.

Finally, two issues remain to be considered which pose potential threats to a uniform CPEP evaluation system for all types of contractors. The first is the problem of change within CPEP itself. Some might maintain that because the criteria and standards change from year to year, and because of the need for potential bidders in fixed price procurements to know what standards will be applied for damage/incentive assessment, it isn't possible to develop a CPEP evaluation methodology by which all contractors can be rated. We respond that while the format of CPEP has, will, and should change as priorities change, the basic responsibilities of intermediaries remain the same and therefore contractor scores should be compared. In this regard, most of the shifting in criteria and standards over the last four years has reflected minor technical issues rather than changes in substance.

The second threat to a uniform evaluation methodology is more serious and has the potential of occurring both within and between the two types of contractors. We are referring here to the problems resulting from uneven application of service abatements by HCFA. The abatement process surfaced in the past few years as a result of federal budget constraints. In the process, HCFA relaxed some processing standards and reduced or eliminated certain non-essential intermediary functions to lower overall Medicare administrative costs. Examples from the fiscal 1982 cost saving initiatives are: relaxing the claims processing standard by two days; reductions in effort levels for medical and utilization review; and elimination of second request notices in claims development.

Table 5.3: Simulated CPEP Composite Score Weighting System

I. FUNCTIONAL AREAS	Weights
A. Bill Processing	8.325
B. Provider Reimbursement	11.155
C. Beneficiary Services	5.162
D. Fiscal Management	3.996
E. General Administration	4.662
Total	33.300

II. STATISTICAL AREAS	Weights
A. Adjusted Unit Cost Per Claim	33.300
B. Timeliness of Claims Processing	16.317
C. Timeliness of Cost Report Settlement	16.983
Total	66.600

These initiatives pose a threat to the national evaluation methodology only when they are not applied uniformly to all contractors. Fixed price contractors have told us they implemented only some of the abatements mandated by HCFA for cost contractors. We have heard from others that the abatement process for cost contractors was administered unevenly among the HCFA regions. Clearly, when responsibilities differ among contractors, uniform performance measures that take account of abatements are needed.

In this chapter we consider how HCFA should evaluate the performance of fixed price contractors. One evaluation issue is that of measuring the performance of an individual contractor to see if its performance is acceptable. A second a broader issue is that of measuring the performance of fixed price contractors relative to traditional cost reimbursed contractors. In regard to the fixed price issue, we recommend that HCFA continue to use CPEP as the evaluation methodology for individual fixed price contractors. In regard to the second issue of evaluating the performance of fixed price contractors relative to traditional cost reimbursed contractors, we recommend that a mixture of statistical analysis and case studies be used.

Finally, we note that the evaluation of fixed price contracting has been hampered by the fact that poor performing contractors have usually been chosen as the sites for fixed price competitions. This fact makes it difficult to determine whether subsequent improvements in performance reflect the effects of a fixed price contract, a competitive procurement, the replacement of an incumbent contractor or some combination of all three. To resolve this issue, it may be desirable for HCFA to undertake some fixed price competitions in areas where performance has been satisfactory.

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APPENDIX

Regression Results

DESCRIPTIVE STATISTICS

	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
TCPB	3637.00520142	6.91445856	27072.26847939	3.66542236	1.91452928
TCPBP	2805.78533106	5.33419264	15618.32858260	1.24138878	1.11417628
DNY	27.00000000	0.05133080	27.00000000	0.04878870	0.22088165
DNYFP	3.00000000	0.00570342	3.00000000	0.00568169	0.07537702
DMO	11.00000000	0.02091255	11.00000000	0.02051421	0.14322784
DMOFP	3.00000000	0.00570342	3.00000000	0.00568169	0.07537702
BILLINV	2202.75115740	4.18773984	21382.69795400	23.15837937	4.81231539
BILLRET	1181.44539326	2.24609390	3390.78565383	1.40409211	1.18494393
DEVRAT	2305.43952387	4.38296487	13219.84631319	5.93368735	2.43591612
AUDPCT	28990.68708365	55.11537468	1902061.47297006	579.48360384	24.07246568
PTTOT	5147.60928753	9.78632944	64500.26318049	26.90297685	5.18680796
MRB	4373.81866851	8.31524462	199902.71771270	311.49208681	17.64913842
PIPPCT	7379.35276655	14.02918777	202125.43623903	187.80782983	13.70429968
SETCRD	47469.01833333	90.24528200	4734279.69805584	857.95190892	29.29081612
RENT	496939.19980530	944.75133043	490369441.88941030	39781.85091689	199.45388168
DTENTY	6951.30947586	13.21541725	92357.83135943	0.93976413	0.96941433
OPMGR	15213.62868864	28.92324846	444706.85185723	8.91293211	2.98545342
SRSYANL	16716.98513074	31.78134055	536048.04396773	9.06637431	3.01104206
CLRK	89829.35716329	170.77824556	15393473.92194657	100.14077340	10.00703619
OUTPCT	29866.13920399	56.77973233	1740506.23905558	85.17114174	9.22882125
SNFPCT	1110.34155518	2.11091550	8538.94851217	11.80021202	3.43514367
HHAPCT	4482.83318585	8.52249655	62818.38693148	46.88277441	6.84709971
OTHPCT	1535.25310188	2.91873213	10273.84102671	11.03399708	3.32174609
YR77	70.00000000	0.13307985	70.00000000	0.11558935	0.33998434
YR78	69.00000000	0.13117871	69.00000000	0.11418794	0.33791706
BILLPAY	379179.39308900	720.87337089	291725883.69311922	35020.10747507	187.13660111

APPENDIX: REGRESSION RESULTS

OEP VARIABLE: TCPBP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	15495.273	166.616	586.279	0.0001
ERROR	433	123.055	0.284192		
U TOTAL	526	15618.329			

ROOT MSE	0.533097	R-SQUARE	0.9921
DEP MEAN	5.334193	ADJ R-SQ	0.9904
C.V.	9.993951		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
ONY	1	0.349620	0.430174	0.813	0.4168	NY BEFORE FIXED PRICE=1
DNYFP	1	-0.136306	0.849496	-0.160	0.8726	NY AFTER FIXED PRICE =1
DMO	1	0.166300	0.555615	0.299	0.7648	MO BEFORE FIXED PRICE=1
OMOFP	1	-1.249799	0.645058	-1.937	0.0533	MO AFTER FIXED PRICE=1
BILLPRO	1	-0.000255227	0.0001843097	-1.385	0.1668	TOTAL BILLS PROCESSED (000)
BILLRET	1	0.072185	0.029327	2.461	0.0142	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.034532	0.015844	2.180	0.0298	OEVELOPMENT RATE
AUDPCT	1	0.00486912	0.001587154	3.068	0.0023	PCT OF PROVEDERS AUDITED
PTTOT	1	0.010056	0.006481047	1.552	0.1215	AV INTERMED PROCESSING TIME
MRB	1	-0.0045822	0.002759469	-1.661	0.0975	% BILLS RECVD IN MACHINE REAOABLE FORM
PIPPCT	1	0.001911792	0.004729089	0.404	0.6862	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000122056	0.001179908	-0.103	0.9177	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.0000637054	0.0002753885	0.231	0.8172	RENT PER SQ FOOT
DTENTY	1	0.186581	0.062348	2.993	0.0029	DATA ENTRY SALARY
OPMGR	1	-0.049632	0.016664	-2.978	0.0031	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.00194758	0.014809	-0.132	0.8954	SR SYS ANALYST SALARY (000)
CLRK	1	0.034893	0.007400894	4.715	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.041890	0.014251	-2.939	0.0035	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-0.024697	0.027902	-0.885	0.3766	PERCENT OF CLAIMS REC'O, SNF
HHAPCT	1	-0.073847	0.014042	-5.259	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.079797	0.023880	-3.342	0.0009	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.044327	0.097473	-0.455	0.6495	
YR78	1	-0.098648	0.103530	-0.953	0.3412	
YR79	1	0.014681	0.116401	0.126	0.8997	
YR80	1	0.058828	0.131543	0.447	0.6549	
YR81	1	0.329684	0.154561	2.133	0.0335	
YR82	1	0.247429	0.173910	1.423	0.1555	
YR83	1	0.726669	0.196903	3.690	0.0003	
NOMODEL	1	0.233109	0.174257	1.338	0.1817	
D00020	1	0.114876	0.535570	0.214	0.8303	
D00030	1	1.075163	0.512075	2.100	0.0363	
D00040	1	1.286425	0.657946	1.955	0.0512	

APPENDIX FOR TABLE 2.10(a)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERRDR	T FOR HO: PARAMETER=0	PRDB > |T|	VARIABLE LABEL
D00041	1	0.778983	0.578358	1.347	0.1787	
D00050	1	0.918364	0.513958	1.787	0.0747	
D00060	1	1.374258	0.484984	2.834	0.0048	
D00070	1	1.226201	0.451720	2.715	0.0069	
D00080	1	0.992005	0.539047	1.840	0.0664	
D00090	1	0.892749	0.580101	1.539	0.1245	
D00100	1	-0.110895	0.519668	-0.213	0.8311	
D00101	1	0.725025	0.463282	1.565	0.1183	
D00110	1	1.956649	0.467851	4.182	0.0001	
D00121	1	0.273671	0.661900	0.413	0.6795	
D00130	1	0.836352	0.501657	1.667	0.0962	
D00140	1	0.296324	0.504934	0.587	0.5576	
D00141	1	0.627491	0.529780	1.184	0.2369	
D00150	1	0.507092	0.520418	0.974	0.3304	
D00160	1	0.956404	0.513040	1.864	0.0630	
D00180	1	0.417858	0.466987	0.895	0.3714	
D00190	1	-0.080506	0.497625	-0.162	0.8716	
D00200	1	0.470383	0.580657	0.810	0.4183	
D00210	1	0.281774	0.604784	0.466	0.6415	
D00220	1	0.411971	0.538719	0.765	0.4449	
D00230	1	0.905843	0.508622	1.781	0.0756	
D00250	1	2.219912	0.467718	4.746	0.0001	
D00260	1	0.260827	0.561526	0.464	0.6425	
D00270	1	1.579582	0.448777	3.520	0.0005	
D00280	1	-0.225280	0.548186	-0.411	0.6813	
D00290	1	1.684176	0.474467	3.550	0.0004	
D00310	1	0.781037	0.469652	1.663	0.0970	
D00320	1	0.853101	0.597432	1.428	0.1540	
D00332	1	0.513722	0.510629	1.006	0.3149	
D00333	1	-0.090637	0.518448	-0.175	0.8613	
D00334	1	1.082493	0.477488	2.267	0.0239	
D00337	1	0.271824	0.501691	0.542	0.5882	
D00340	1	0.154687	0.626506	0.247	0.8051	
D00350	1	0.735494	0.534923	1.375	0.1699	
D00361	1	0.499690	0.459208	1.088	0.2771	
D00362	1	0.639512	0.502018	1.274	0.2034	
D00363	1	-0.340870	0.525859	-0.648	0.5172	
D00364	1	0.432229	0.434032	0.996	0.3199	
D00370	1	0.717409	0.451008	1.591	0.1124	
D00380	1	1.010022	0.477155	2.117	0.0348	
D00390	1	0.824353	0.495990	1.662	0.0972	
D00392	1	0.671906	0.568256	1.182	0.2377	
D00400	1	0.656115	0.647349	1.014	0.3114	
D00410	1	1.756559	0.468354	3.750	0.0002	
D00423	1	-0.030230	0.473138	-0.064	0.9491	
D00424	1	-0.539351	0.546658	-0.987	0.3244	
D00430	1	0.668662	0.600274	1.114	0.2659	
D00441	1	0.293555	0.453700	0.647	0.5180	
D00443	1	0.976123	0.478007	2.042	0.0417	

APPENDIX FOR TABLE 2.10(a)

(continued)

VARIABLE	OF	PARAMETER ESTIMATE	STANOARO ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
D00444	1	0.211013	0.510258	0.414	0.6794	
D00450	1	0.604972	0.539367	1.122	0.2626	
000460	1	2.001783	0.483692	4.139	0.0001	
000470	1	4.689616	0.682850	6.868	0.0001	
017120	1	1.202888	0.548754	2.192	0.0289	
052280	1	2.792717	0.705235	3.960	0.0001	
D53310	1	1.478578	0.521260	2.837	0.0048	
D56360	1	4.696284	0.626141	7.500	0.0001	
D69999	1	2.196160	0.653176	3.362	0.0008	
D79999	1	4.993608	0.941389	5.305	0.0001	
010	1	0.972876	0.534483	1.820	0.0694	
D302	1	-0.602633	0.589690	-1.022	0.3074	

TEST: NY_1	NUMERATOR:	1.35651	OF:	1	F VALUE:	4.7732
	DENOMINATOR:	0.284192	OF:	433	PROB >F :	0.0294
TEST: NYO	NUMERATOR:	0.145067	OF:	1	F VALUE:	0.5105
	OENOMINATOR:	0.284192	OF:	433	PROB >F :	0.4753
TEST: NY1	NUMERATOR:	0.162361	DF:	1	F VALUE:	0.5713
	OENOMINATOR:	0.284192	DF:	433	PROB >F :	0.4502
TEST: MO_1	NUMERATOR:	10.5437	OF:	1	F VALUE:	37.1006
	DENOMINATOR:	0.284192	OF:	433	PROB >F :	.0.0001
TEST: MOO	NUMERATOR:	3.62201	OF:	1	F VALUE:	12.7450
	DENOMINATOR:	0.284192	DF:	433	PROB >F :	0.0004
TEST: MO1	NUMERATOR:	0.31272	OF:	1	F VALUE:	1.1004
	DENOMINATOR:	0.284192	DF:	433	PROB >F :	0.2948

APPENDIX FOR TABLE 2.10(a)

(continued)

DEP VARIABLE: TCPBP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	94	15495.598	164.847	580.244	0.0001
ERROR	432	122.731	0.284099		
U TOTAL	526	15618.329			

ROOT MSE	0.533010	R-SQUARE	0.9921
DEP MEAN	5.334193	ADJ R-SQ	0.9905
C.V.	9.992319		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	0.272192	0.436167	0.624	0.5329	NY BEFORE FIXED PRICE=1
DNYFP	1	-0.397053	0.883726	-0.449	0.6534	NY AFTER FIXED PRICE =1
DMD	1	0.064177	0.563688	0.114	0.9094	MD BEFORE FIXED PRICE=1
DMDFP	1	-1.497661	0.685410	-2.185	0.0294	MD AFTER FIXED PRICE=1
BILLPRD	1	0.0002691724	0.000524287	0.513	0.6079	TOTAL BILLS PROCESSED (000)
BILLSQ	1	-1.11948E-09	1.04782E-09	-1.068	0.2859	BILLPRO SQUARED (0000)
BILLRET	1	0.070434	0.029368	2.398	0.0169	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.035125	0.015851	2.216	0.0272	DEVELOPMENT RATE
AUDPCT	1	0.004868583	0.001586895	3.068	0.0023	PCT OF PRDVEDERS AUDITED
PTTOT	1	0.010366	0.006486477	1.598	0.1107	AV INTERMED PROCESSING TIME
MRB	1	-0.00519701	0.002818393	-1.844	0.0659	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	0.001350187	0.004757447	0.284	0.7767	PCT OF PROVIDERS ON PIP
SETCRD	1	-.0000573242	0.00118127	-0.049	0.9613	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.0001267556	0.0002815968	0.450	0.6528	RENT PER SQ FOOT
DTENTY	1	0.188621	0.062367	3.024	0.0026	DATA ENTRY SALARY
OPMGR	1	-0.049030	0.016671	-2.941	0.0034	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.00101969	0.014832	-0.069	0.9452	SR SYS ANALYST SALARY (000)
CLRK	1	0.034115	0.007435404	4.588	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.042568	0.014262	-2.985	0.0030	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-0.020806	0.028134	-0.740	0.4600	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.076474	0.014253	-5.365	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.073419	0.024611	-2.983	0.0030	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.054372	0.097910	-0.555	0.5790	
YR78	1	-0.118483	0.105164	-1.127	0.2605	
YR79	1	-0.0028964	0.117539	-0.025	0.9804	
YR80	1	0.032113	0.133877	0.240	0.8105	
YR81	1	0.284185	0.160297	1.773	0.0770	
YR82	1	0.183461	0.183902	0.998	0.3190	
YR83	1	0.662914	0.205716	3.222	0.0014	
NDMODEL	1	0.195925	0.177671	1.103	0.2708	
D00020	1	0.00770019	0.544798	0.014	0.9887	
D00030	1	0.995038	0.517455	1.923	0.0551	

APPENDIX FOR TABLE 2.10(b)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00040	1	0.782510	0.809454	0.967	0.3342	
D00041	1	0.400301	0.678247	0.590	0.5554	
D00050	1	0.801834	0.525322	1.526	0.1277	
D00060	1	1.276304	0.493496	2.586	0.0100	
D00070	1	1.227690	0.451648	2.718	0.0068	
D00080	1	0.948386	0.540503	1.755	0.0800	
D00090	1	0.491469	0.690998	0.711	0.4773	
D00100	1	-0.141663	0.520381	-0.272	0.7856	
D00101	1	0.624030	0.472754	1.320	0.1875	
D00110	1	1.970151	0.467946	4.210	0.0001	
D00121	1	-0.194408	0.793673	-0.245	0.8066	
D00130	1	0.571654	0.559429	1.022	0.3074	
D00140	1	0.203243	0.512314	0.397	0.6918	
D00141	1	0.597997	0.530412	1.127	0.2602	
D00150	1	0.435455	0.524635	0.830	0.4070	
D00160	1	0.785753	0.537250	1.463	0.1443	
D00180	1	0.335305	0.473261	0.708	0.4790	
D00190	1	-0.205683	0.511152	-0.402	0.6876	
D00200	1	0.092089	0.680018	0.135	0.8923	
D00210	1	-0.126392	0.715262	-0.177	0.8598	
D00220	1	0.198136	0.574615	0.345	0.7304	
D00230	1	0.793217	0.519351	1.527	0.1274	
D00250	1	2.219067	0.467642	4.745	0.0001	
D00260	1	0.252105	0.561494	0.449	0.6537	
D00270	1	1.511883	0.453156	3.336	0.0009	
D00280	1	-0.386186	0.568412	-0.679	0.4972	
D00290	1	1.727176	0.476093	3.628	0.0003	
D00310	1	0.516365	0.530916	0.973	0.3313	
D00320	1	0.854109	0.597335	1.430	0.1535	
D00332	1	0.323137	0.540812	0.598	0.5505	
D00333	1	-0.181479	0.525291	-0.345	0.7299	
D00334	1	1.020334	0.480942	2.122	0.0344	
D00337	1	0.252039	0.501951	0.502	0.6158	
D00340	1	0.098093	0.628639	0.156	0.8761	
D00350	1	0.658575	0.539660	1.220	0.2230	
D00361	1	0.392494	0.469968	0.835	0.4041	
D00362	1	0.502743	0.518004	0.971	0.3323	
D00363	1	-0.687834	0.617983	-1.113	0.2663	
D00364	1	0.377299	0.436996	0.863	0.3884	
D00370	1	0.696659	0.451353	1.543	0.1234	
D00380	1	0.936227	0.482051	1.942	0.0528	
D00390	1	0.638887	0.525415	1.216	0.2247	
D00392	1	0.663503	0.568217	1.168	0.2436	
D00400	1	0.224828	0.762812	0.295	0.7683	
D00410	1	1.759682	0.468286	3.758	0.0002	
D00423	1	-0.154515	0.487154	-0.317	0.7513	
D00424	1	-0.523095	0.546781	-0.957	0.3393	
D00430	1	0.596678	0.603946	0.988	0.3237	
D00441	1	0.264941	0.454415	0.583	0.5602	

APPENDIX FOR TABLE 2.10(b)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00443	1	1.029629	0.480545	2.143	0.0327	
D00444	1	0.216267	0.510199	0.424	0.6719	
D00450	1	0.392275	0.574853	0.682	0.4954	
D00460	1	2.058952	0.486564	4.232	0.0001	
D00470	1	4.833315	0.695861	6.946	0.0001	
D17120	1	1.143629	0.551461	2.074	0.0387	
D52280	1	2.402458	0.794118	3.025	0.0026	
D53310	1	1.325074	0.540617	2.451	0.0146	
D56360	1	4.616904	0.630432	7.323	0.0001	
D69999	1	1.686488	0.808749	2.085	0.0376	
D79999	1	4.557549	1.025918	4.442	0.0001	
D10	1	0.841932	0.548270	1.536	0.1254	
D302	1	-0.573328	0.590231	-0.971	0.3319	

TEST: NY_1	NUMERATOR:	1.6094	DF:	1	F VALUE:	5.6649
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.0177
TEST: NYO	NUMERATOR:	0.258699	DF:	1	F VALUE:	0.9106
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.3405
TEST: NY1	NUMERATOR:	.0631885	DF:	1	F VALUE:	0.2224
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.6374
TEST: MO_1	NUMERATOR:	10.6	DF:	1	F VALUE:	37.3110
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.0001
TEST: MOO	NUMERATOR:	3.93982	DF:	1	F VALUE:	13.8678
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.0002
TEST: MO1	NUMERATOR:	0.509831	OF:	1	F VALUE:	1.7946
	DENOMINATOR:	0.284099	DF:	432	PROB >F :	0.1811

APPENDIX FOR TABLE 2.10(b)

(continued)

DEP VARIABLE: TCPBP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	15494.966	166.613	584.808	0.0001
ERROR	433	123.362	0.284901		
U TOTAL	526	15618.329			

ROOT MSE	0.533761	R-SQUARE	0.9921
DEP MEAN	5.334193	ADJ R-SQ	0.9904
C.V.	10.00641		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	0.291010	0.428910	0.678	0.4978	NY BEFORE FIXED PRICE=1
DNYFP	1	-1.054092	0.619787	-1.701	0.0897	NY AFTER FIXED PRICE =1
DMD	1	0.077377	0.557071	0.139	0.8896	MD BEFORE FIXED PRICE=1
DMDFP	1	-1.441569	0.641635	-2.247	0.0252	MD AFTER FIXED PRICE=1
BILLINV	1	-0.00928994	0.010166	-0.914	0.3613	BILLS INVERSE (000000)
BILLRET	1	0.071547	0.029362	2.437	0.0152	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.037029	0.015846	2.337	0.0199	DEVELOPMENT RATE
AUDPCT	1	0.004788048	0.001593665	3.004	0.0028	PCT OF PROVEDERS AUDITED
PTTDT	1	0.011504	0.006706981	1.715	0.0870	AV INTERMED PROCESSING TIME
MRB	1	-0.00507638	0.002731577	-1.858	0.0638	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	0.0008177047	0.004732739	0.173	0.8629	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000189901	0.001193628	-0.159	0.8737	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	.00006226728	0.0002760197	0.226	0.8216	RENT PER SQ FOOT
DTENTY	1	0.182929	0.062335	2.935	0.0035	DATA ENTRY SALARY
DPMGR	1	-0.049042	0.016676	-2.941	0.0034	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.0018875	0.014838	-0.127	0.8988	SR SYS ANALYST SALARY (000)
CLRK	1	0.036480	0.007644259	4.772	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.044741	0.014670	-3.050	0.0024	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-0.020157	0.027774	-0.726	0.4684	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.078317	0.014227	-5.505	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.072561	0.024885	-2.916	0.0037	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.050197	0.097565	-0.515	0.6072	
YR78	1	-0.113373	0.103562	-1.095	0.2742	
YR79	1	-0.000272847	0.116407	-0.002	0.9981	
YR80	1	0.035482	0.131226	0.270	0.7870	
YR81	1	0.306067	0.154067	1.987	0.0476	
YR82	1	0.216263	0.172472	1.254	0.2106	
YR83	1	0.667114	0.192667	3.463	0.0006	
NOMODEL	1	0.223873	0.174302	1.284	0.1997	
D00020	1	-0.00626859	0.537084	-0.012	0.9907	
D00030	1	0.980835	0.513078	1.912	0.0566	
D00040	1	0.726689	0.580153	1.253	0.2110	

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	0.443740	0.546419	0.812	0.4172	
D00050	1	0.802057	0.514270	1.560	0.1196	
D00060	1	1.288820	0.484931	2.658	0.0082	
D00070	1	1.239484	0.453284	2.734	0.0065	
D00080	1	0.900000	0.545051	1.651	0.0994	
D00090	1	0.507638	0.531665	0.955	0.3402	
D00100	1	-0.193740	0.521029	-0.372	0.7102	
D00101	1	0.635914	0.460717	1.380	0.1682	
D00110	1	1.962204	0.469364	4.181	0.0001	
D00121	1	-0.172861	0.599572	-0.288	0.7732	
D00130	1	0.604927	0.481173	1.257	0.2094	
D00140	1	0.194110	0.503900	0.385	0.7003	
D00141	1	0.584230	0.530868	1.101	0.2717	
D00150	1	0.415014	0.521013	0.797	0.4261	
D00160	1	0.768764	0.513858	1.496	0.1354	
D00180	1	0.385968	0.466698	0.827	0.4087	
D00190	1	-0.192352	0.494861	-0.389	0.6977	
D00200	1	0.123062	0.539232	0.228	0.8196	
D00210	1	-0.138188	0.542159	-0.255	0.7989	
D00220	1	0.207563	0.534579	0.388	0.6980	
D00230	1	0.802211	0.509740	1.574	0.1163	
D00250	1	2.211248	0.468309	4.722	0.0001	
D00260	1	0.237532	0.562413	0.422	0.6730	
D00270	1	1.540414	0.448022	3.438	0.0006	
D00280	1	-0.383978	0.546869	-0.702	0.4830	
D00290	1	1.698359	0.475446	3.572	0.0004	
D00310	1	0.557970	0.450742	1.238	0.2164	
D00320	1	0.829519	0.598420	1.386	0.1664	
D00332	1	0.325734	0.503796	0.647	0.5183	
D00333	1	-0.202595	0.516294	-0.392	0.6950	
D00334	1	1.018802	0.477202	2.135	0.0333	
D00337	1	0.231883	0.501869	0.462	0.6443	
D00340	1	0.028324	0.633572	0.045	0.9644	
D00350	1	0.620481	0.536211	1.157	0.2478	
D00361	1	0.414398	0.457382	0.906	0.3654	
D00362	1	0.524467	0.502941	1.043	0.2976	
D00363	1	-0.638797	0.491774	-1.299	0.1946	
D00364	1	0.403547	0.433802	0.930	0.3528	
D00370	1	0.708552	0.451675	1.569	0.1174	
D00380	1	0.929838	0.476520	1.951	0.0517	
D00390	1	0.646209	0.493184	1.310	0.1908	
D00392	1	0.647719	0.568697	1.139	0.2554	
D00400	1	0.228526	0.618780	0.369	0.7121	
D00410	1	1.745353	0.468827	3.723	0.0002	
D00423	1	-0.145757	0.471796	-0.309	0.7575	
D00424	1	-0.514295	0.547646	-0.939	0.3482	
D00430	1	0.528296	0.606070	0.872	0.3839	
D00441	1	0.274893	0.453923	0.606	0.5451	
D00443	1	1.115484	0.500231	2.230	0.0263	

APPENDIX FOR TABLE 2.10(c)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	0.203666	0.510876	0.399	0.6903	
D00450	1	0.391935	0.529330	0.740	0.4594	
D00460	1	2.170975	0.511862	4.241	0.0001	
D00470	1	4.823079	0.680993	7.082	0.0001	
D17120	1	1.107800	0.553176	2.003	0.0458	
D52280	1	2.392575	0.711472	3.363	0.0008	
D53310	1	1.326271	0.523504	2.533	0.0116	
D56360	1	4.576825	0.629889	7.266	0.0001	
D69999	1	1.588942	0.549914	2.889	0.0041	
D79999	1	4.452161	0.988198	4.505	0.0001	
D10	1	0.835897	0.535334	1.561	0.1191	
D302	1	-0.409149	0.629250	-0.650	0.5159	

TEST: NY_1	NUMERATOR:	9.28033	DF:	1	F VALUE:	32.5739
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.0001
TEST: NYO	NUMERATOR:	3.05316	DF:	1	F VALUE:	10.7166
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.0011
TEST: NY1	NUMERATOR:	0.200971	DF:	1	F VALUE:	0.7054
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.4014
TEST: MO_1	NUMERATOR:	11.7276	DF:	1	F VALUE:	41.1636
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.0001
TEST: MOO	NUMERATOR:	4.26437	DF:	1	F VALUE:	14.9679
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.0001
TEST: MO1	NUMERATOR:	0.497752	DF:	1	F VALUE:	1.7471
	DENOMINATOR:	0.284901	DF:	433	PROB >F :	0.1869

APPENDIX FOR TABLE 2.10(c)

(continued)

DEP VARIABLE: TCPBP

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	15496.884	166.633	594.115	0.0001
ERROR	433	121.445	0.280473		
U TOTAL	526	15618.329			

ROOT MSE	0.529597	R-SQUARE	0.9922
DEP MEAN	5.334193	ADJ R-SQ	0.9906
C.V.	9.928343		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	0.129572	0.429702	0.302	0.7631	NY BEFORE FIXED PRICE=1
DNYFP	1	-1.747732	0.669613	-2.610	0.0094	NY AFTER FIXED PRICE =1
DMO	1	-0.405543	0.582454	-0.696	0.4866	MO BEFORE FIXED PRICE=1
DMOFP	1	-2.099186	0.684069	-3.069	0.0023	MO AFTER FIXED PRICE=1
LNBILL	1	0.349146	0.125950	2.772	0.0058	LN OF BILLS PROCESSED
BILLRET	1	0.078397	0.029232	2.682	0.0076	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.038354	0.015715	2.441	0.0151	DEVELOPMENT RATE
AUDPCT	1	0.004846655	0.001576699	3.074	0.0022	PCT OF PROVEDERS AUDITED
PTTOT	1	0.012675	0.00651255	1.946	0.0523	AV INTERMED PROCESSING TIME
MRB	1	-0.00645031	0.002746924	-2.348	0.0193	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	0.0002008625	0.004688334	0.043	0.9658	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000173345	0.001171183	-0.148	0.8824	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.0002078393	0.0002774938	0.749	0.4543	RENT PER SQ FOOT
DTENTY	1	0.156180	0.062490	2.499	0.0128	DATA ENTRY SALARY
OPMGR	1	-0.046050	0.016553	-2.782	0.0056	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.00317219	0.014719	-0.216	0.8295	SR SYS ANALYST SALARY (000)
CLRK	1	0.022077	0.00865961	2.549	0.0111	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.067608	0.016978	-3.982	0.0001	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-0.023459	0.027575	-0.851	0.3954	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.097108	0.015840	-6.130	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.072440	0.023829	-3.040	0.0025	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0:000542396	0.098322	-0.006	0.9956	
YR78	1	-0.071737	0.103461	-0.693	0.4884	
YR79	1	0.086262	0.119127	0.724	0.4694	
YR80	1	0.079362	0.130790	0.607	0.5443	
YR81	1	0.288391	0.153012	1.885	0.0601	
YR82	1	0.192531	0.171289	1.124	0.2616	
YR83	1	0.688848	0.191292	3.601	0.0004	
NOMODEL	1	0.170696	0.173917	0.981	0.3269	
D00020	1	-0.820697	0.615276	-1.334	0.1829	
D00030	1	0.522547	0.538128	0.971	0.3321	
D00040	1	0.009825626	0.637456	0.015	0.9877	

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	-0.022108	0.570680	-0.039	0.9691	
D00050	1	0.483079	0.524616	0.921	0.3577	
D00060	1	0.992118	0.494286	2.007	0.0454	
D00070	1	1.246040	0.448792	2.776	0.0057	
D00080	1	0.872795	0.536462	1.627	0.1045	
D00090	1	-0.579115	0.666232	-0.869	0.3852	
D00100	1	-0.300252	0.517922	-0.580	0.5624	
D00101	1	0.074040	0.501678	0.148	0.8827	
D00110	1	1.830713	0.465765	3.931	0.0001	
D00121	1	-0.830762	0.645057	-1.288	0.1985	
D00130	1	-0.072309	0.540092	-0.134	0.8936	
D00140	1	-0.310272	0.534841	-0.580	0.5621	
D00141	1	0.089317	0.558354	0.160	0.8730	
D00150	1	-0.125823	0.555899	-0.226	0.8210	
D00160	1	0.019224	0.584633	0.033	0.9738	
D00180	1	0.218880	0.463488	0.472	0.6370	
D00190	1	-0.377092	0.496057	-0.760	0.4476	
D00200	1	-0.246539	0.553358	-0.446	0.6562	
D00210	1	-0.540065	0.559394	-0.965	0.3349	
D00220	1	-0.388303	0.577219	-0.673	0.5015	
D00230	1	0.112494	0.568846	0.198	0.8433	
D00250	1	1.917467	0.474858	4.038	0.0001	
D00260	1	-0.225198	0.583761	-0.386	0.6999	
D00270	1	1.228063	0.457431	2.685	0.0075	
D00280	1	-0.776729	0.562983	-1.380	0.1684	
D00290	1	1.541865	0.473996	3.253	0.0012	
D00310	1	-0.380369	0.566804	-0.671	0.5025	
D00320	1	0.246080	0.631690	0.390	0.6971	
D00332	1	-0.283468	0.550757	-0.515	0.6070	
D00333	1	-0.440530	0.520279	-0.847	0.3976	
D00334	1	0.631037	0.495103	1.275	0.2031	
D00337	1	0.096179	0.500571	0.192	0.8477	
D00340	1	-0.738354	0.693586	-1.065	0.2877	
D00350	1	0.303570	0.545562	0.556	0.5782	
D00361	1	0.221632	0.459692	0.482	0.6300	
D00362	1	0.217972	0.512511	0.425	0.6708	
D00363	1	-1.113134	0.519899	-2.141	0.0328	
D00364	1	0.075014	0.445302	0.168	0.8663	
D00370	1	0.526746	0.451150	1.168	0.2436	
D00380	1	0.512794	0.498061	1.030	0.3038	
D00390	1	-0.231901	0.591244	-0.392	0.6951	
D00392	1	0.208603	0.586081	0.356	0.7221	
D00400	1	-0.879999	0.745645	-1.180	0.2386	
D00410	1	1.562334	0.469587	3.327	0.0010	
D00423	1	-0.647846	0.505231	-1.282	0.2004	
D00424	1	-0.852623	0.555240	-1.536	0.1254	
D00430	1	0.278955	0.606667	0.460	0.6459	
D00441	1	-0.121766	0.471328	-0.258	0.7963	
D00443	1	1.087138	0.476346	2.282	0.0230	

APPENDIX FOR TABLE 2.10(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	0.200999	0.506721	0.397	0.6918	
D00450	1	-0.095022	0.557101	-0.171	0.8646	
D00460	1	2.157081	0.482927	4.467	0.0001	
D00470	1	4.682138	0.675733	6.929	0.0001	
D17120	1	1.201880	0.544769	2.206	0.0279	
D52280	1	1.191314	0.841961	1.415	0.1578	
D53310	1	0.823066	0.553905	1.486	0.1380	
D56360	1	4.224393	0.638936	6.612	0.0001	
D69999	1	0.663337	0.650130	1.020	0.3081	
D79999	1	3.516361	1.024499	3.432	0.0007	
D10	1	0.043523	0.609949	0.071	0.9431	
D302	1	-0.122648	0.611414	-0.201	0.8411	

TEST: NY_1	NUMERATOR:	11.2292	DF:	1	F VALUE:	40.0365
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0001
TEST: NYO	NUMERATOR:	4.78019	DF:	1	F VALUE:	17.0433
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0001
TEST: NY1	NUMERATOR:	1.04394	DF:	1	F VALUE:	3.7221
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0544
TEST: MO_1	NUMERATOR:	13.0299	DF:	1	F VALUE:	46.4569
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0001
TEST: MOO	NUMERATOR:	5.15116	DF:	1	F VALUE:	18.3660
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0001
TEST: MO1	NUMERATOR:	0.864039	DF:	1	F VALUE:	3.0807
	DENOMINATOR:	0.280473	DF:	433	PROB >F :	0.0799

APPENDIX FOR TABLE 2.10(d)

(continued)

DEP VARIABLE: TCPB TOTAL UNIT COST PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	26843.594	288.641	546.547	0.0001
ERROR	433	228.675	0.528117		
U TOTAL	526	27072.268			

ROOT MSE	0.726717	R-SQUARE	0.9916
DEP MEAN	6.914459	ADJ R-SQ	0.9898
C.V.	10.51011		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	0.133018	0.586413	0.227	0.8207	NY BEFORE FIXED PRICE=1
DNYFP	1	-0.879151	1.158033	-0.759	0.4482	NY AFTER FIXED PRICE =1
DMO	1	0.014698	0.757415	0.019	0.9845	MO BEFORE FIXED PRICE=1
DMOFP	1	-0.049475	0.879343	-0.056	0.9552	MO AFTER FIXED PRICE=1
BILLPRO	1	-0.000157399	0.0002512509	-0.626	0.5313	TOTAL BILLS PROCESSED (000)
BILLRET	1	0.104273	0.039978	2.608	0.0094	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.041838	0.021598	1.937	0.0534	DEVELOPMENT RATE
AUDPCT	1	0.006515126	0.002163608	3.011	0.0028	PCT OF PROVEDERS AUDITED
PTTOT	1	0.012758	0.008834959	1.444	0.1494	AV INTERMED PROCESSING TIME
MRB	1	0.002991969	0.003761706	0.795	0.4268	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	0.0006500807	0.006446691	0.101	0.9197	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000798836	0.001608449	-0.497	0.6197	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	-.0000383369	0.0003754094	-0.102	0.9187	RENT PER SQ FOOT
DTENTY	1	0.252318	0.084992	2.969	0.0032	DATA ENTRY SALARY
OPMGR	1	-0.057832	0.022716	-2.546	0.0112	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.026750	0.020188	-1.325	0.1858	SR SYS ANALYST SALARY (000)
CLRK	1	0.058786	0.010089	5.827	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.048851	0.019426	-2.515	0.0123	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	0.030953	0.038036	0.814	0.4162	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.089247	0.019142	-4.662	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.149290	0.032553	-4.586	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.587121	0.132875	-4.419	0.0001	
YR78	1	-1.279527	0.141132	-9.066	0.0001	
YR79	1	-1.767526	0.158678	-11.139	0.0001	
YR80	1	-2.278951	0.179319	-12.709	0.0001	
YR81	1	-2.439072	0.210698	-11.576	0.0001	
YR82	1	-2.851154	0.237074	-12.026	0.0001	
YR83	1	-2.625450	0.268418	-9.781	0.0001	
NOMODEL	1	0.293896	0.237547	1.237	0.2167	
D00020	1	0.186570	0.730088	0.256	0.7984	
D00030	1	1.177531	0.698060	1.687	0.0924	
D00040	1	0.913714	0.896911	1.019	0.3089	

APPENDIX FOR TABLE 2.11(a)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	0.505456	0.788418	0.641	0.5218	
D00050	1	0.758962	0.700627	1.083	0.2793	
D00060	1	1.329272	0.661129	2.011	0.0450	
D00070	1	1.480012	0.615784	2.403	0.0167	
D00080	1	1.127886	0.734828	1.535	0.1255	
D00090	1	0.791229	0.790793	1.001	0.3176	
D00100	1	-0.505189	0.708411	-0.713	0.4761	
D00101	1	0.930515	0.631546	1.473	0.1414	
D00110	1	2.188814	0.637775	3.432	0.0007	
D00121	1	-0.259074	0.902302	-0.287	0.7742	
D00130	1	0.764325	0.683859	1.118	0.2643	
D00140	1	0.115473	0.688325	0.168	0.8669	
D00141	1	0.714709	0.722196	0.990	0.3229	
D00150	1	0.613565	0.709433	0.865	0.3876	
D00160	1	1.106638	0.699376	1.582	0.1143	
D00180	1	0.154569	0.636597	0.243	0.8083	
D00190	1	-0.769092	0.678361	-1.134	0.2575	
D00200	1	-0.277305	0.791551	-0.350	0.7263	
D00210	1	-0.398384	0.824441	-0.483	0.6292	
D00220	1	0.019089	0.734382	0.026	0.9793	
D00230	1	0.951922	0.693354	1.373	0.1705	
D00250	1	2.711845	0.637593	4.253	0.0001	
D00260	1	0.253969	0.765472	0.332	0.7402	
D00270	1	1.711611	0.611773	2.798	0.0054	
D00280	1	-1.129115	0.747287	-1.511	0.1315	
D00290	1	2.008218	0.646792	3.105	0.0020	
D00310	1	0.805517	0.640230	1.258	0.2090	
D00320	1	0.830195	0.814419	1.019	0.3086	
D00332	1	0.379137	0.696089	0.545	0.5863	
D00333	1	-0.398396	0.706748	-0.564	0.5732	
D00334	1	1.167616	0.650911	1.794	0.0735	
D00337	1	-0.090195	0.683905	-0.132	0.8951	
D00340	1	0.043729	0.854052	0.051	0.9592	
D00350	1	0.643300	0.729207	0.882	0.3782	
D00361	1	-0.154732	0.625991	-0.247	0.8049	
D00362	1	0.409173	0.684351	0.598	0.5502	
D00363	1	-1.214130	0.716850	-1.694	0.0910	
D00364	1	0.111706	0.591672	0.189	0.8503	
D00370	1	0.526467	0.614814	0.856	0.3923	
D00380	1	0.729588	0.650457	1.122	0.2626	
D00390	1	0.871955	0.676133	1.290	0.1979	
D00392	1	0.892894	0.774646	1.153	0.2497	
D00400	1	0.494069	0.882465	0.560	0.5759	
D00410	1	2.220522	0.638459	3.478	0.0006	
D00423	1	-0.333727	0.644981	-0.517	0.6051	
D00424	1	-0.633031	0.745204	-0.849	0.3961	
D00430	1	0.316419	0.818294	0.387	0.6992	
D00441	1	0.264419	0.618483	0.428	0.6692	
D00443	1	1.040535	0.651618	1.597	0.1110	

APPENDIX FOR TABLE 2.11(a)

(continued)

DEP VARIABLE: TCPB TOTAL UNIT COST PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	94	26845.008	285.585	542.870	0.0001
ERROR	432	227.260	0.526065		
U TOTAL	526	27072.268			

ROOT MSE	0.725304	R-SQUARE	0.9916
DEP MEAN	6.914459	ADJ R-SQ	0.9898
C.V.	10.48967		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	-0.028698	0.593523	-0.048	0.9615	NY BEFORE FIXED PRICE=1
DNYFP	1	-1.423747	1.202548	-1.184	0.2371	NY AFTER FIXED PRICE =1
DMD	1	-0.198596	0.767050	-0.259	0.7958	MD BEFORE FIXED PRICE=1
DMDFP	1	-0.567161	0.932686	-0.608	0.5434	MD AFTER FIXED PRICE=1
BILLPRO	1	0.0009378613	0.0007134343	1.315	0.1894	TOTAL BILLS PROCESSED (000)
BILLSQ	1	-2.33814E-09	1.42585E-09	-1.640	0.1018	BILLPRO SQUARED (0000)
BILLRET	1	0.100617	0.039963	2.518	0.0122	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.043077	0.021569	1.997	0.0464	DEVELOPMENT RATE
AUDPCT	1	0.006514005	0.0021594	3.017	0.0027	PCT OF PROVEDERS AUDITED
PTTDT	1	0.013406	0.008826606	1.519	0.1296	AV INTERMED PROCESSING TIME
MRB	1	0.001707864	0.003835186	0.445	0.6563	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	-0.000522888	0.006473793	-0.081	0.9357	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000663637	0.001607437	-0.413	0.6799	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.0000933498	0.0003831887	0.244	0.8076	RENT PER SQ FOOT
DTENTY	1	0.256580	0.084867	3.023	0.0026	DATA ENTRY SALARY
OPMGR	1	-0.056574	0.022685	-2.494	0.0130	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.024812	0.020183	-1.229	0.2196	SR SYS ANALYST SALARY (000)
CLRK	1	0.057161	0.010118	5.650	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.050267	0.019408	-2.590	0.0099	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	0.039079	0.038284	1.021	0.3079	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.094735	0.019395	-4.884	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.135968	0.033490	-4.060	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.608100	0.133233	-4.564	0.0001	
YR78	1	-1.320954	0.143105	-9.231	0.0001	
YR79	1	-1.804237	0.159944	-11.280	0.0001	
YR80	1	-2.334746	0.182176	-12.816	0.0001	
YR81	1	-2.534102	0.218127	-11.618	0.0001	
YR82	1	-2.984759	0.250248	-11.927	0.0001	
YR83	1	-2.758610	0.279933	-9.855	0.0001	
NDMDDEL	1	0.216233	0.241769	0.894	0.3716	
D00020	1	-0.037279	0.741345	-0.050	0.9599	
D00030	1	1.010181	0.704137	1.435	0.1521	

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-0.113569	0.695584	-0.163	0.8704	
D00450	1	0.245670	0.735265	0.334	0.7384	
D00460	1	2.574886	0.659369	3.905	0.0001	
D00470	1	6.078952	0.930860	6.530	0.0001	
D17120	1	1.272213	0.748061	1.701	0.0897	
D52280	1	2.750507	0.961376	2.861	0.0044	
D53310	1	1.536965	0.710582	2.163	0.0311	
D56360	1	5.128087	0.853554	6.008	0.0001	
D69999	1	1.963484	0.890410	2.205	0.0280	
D79999	1	6.031157	1.283301	4.700	0.0001	
D10	1	1.224810	0.728607	1.681	0.0935	
D302	1	-1.756576	0.803865	-2.185	0.0294	

TEST: NY_1	NUMERATOR:	2.48748	DF:	1	F VALUE:	4.7101
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.0305
TEST: NYO	NUMERATOR:	0.629414	DF:	1	F VALUE:	1.1918
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.2756
TEST: NY1	NUMERATOR:	9.1E-05	DF:	1	F VALUE:	0.0002
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.9895
TEST: MO_1	NUMERATOR:	2.04544	DF:	1	F VALUE:	3.8731
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.0497
TEST: MOO	NUMERATOR:	.0074381	DF:	1	F VALUE:	0.0141
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.9056
TEST: MO1	NUMERATOR:	1.58181	DF:	1	F VALUE:	2.9952
	DENOMINATOR:	0.528117	DF:	433	PROB >F :	0.0842

APPENDIX FOR TABLE 2.11(a)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
D00443	1	1.152287	0.653912	1.762	0.0788	
D00444	1	-0.102596	0.694263	-0.148	0.8826	
D00450	1	-0.198570	0.782243	-0.254	0.7997	
D00460	1	2.694289	0.662103	4.069	0.0001	
D00470	1	6.379082	0.946907	6.737	0.0001	
D17120	1	1.148445	0.750412	1.530	0.1266	
D52280	1	1.935412	1.080612	1.791	0.0740	
D53310	1	1.216358	0.735656	1.653	0.0990	
D56360	1	4.962295	0.857873	5.784	0.0001	
D69999	1	0.898984	1.100522	0.817	0.4145	
D79999	1	5.120405	1.396039	3.668	0.0003	
D10	1	0.951322	0.746070	1.275	0.2030	
D302	1	-1.695368	0.803169	-2.111	0.0354	

TEST: NY_1	NUMERATOR:	3.31324	DF:	1	F VALUE:	6.2982
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.0125
TEST: NYO	NUMERATOR:	1.1241	DF:	1	F VALUE:	2.1368
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.1445
TEST: NY1	NUMERATOR:	0.090142	DF:	1	F VALUE:	0.1714
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.6791
TEST: MO_1	NUMERATOR:	3.02506	DF:	1	F VALUE:	5.7504
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.0169
TEST: MOO	NUMERATOR:	0.219397	DF:	1	F VALUE:	0.4171
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.5188
TEST: MO1	NUMERATOR:	0.643964	DF:	1	F VALUE:	1.2241
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.2692

APPENDIX FOR TABLE 2.11(b)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00040	1	-0.138762	1.101480	-0.126	0.8998	
D00041	1	-0.285458	0.922939	-0.309	0.7572	
D00050	1	0.515576	0.714842	0.721	0.4711	
D00060	1	1.124685	0.671535	1.675	0.0947	
D00070	1	1.483121	0.614590	2.413	0.0162	
D00080	1	1.036784	0.735500	1.410	0.1594	
D00090	1	-0.046884	0.940290	-0.050	0.9603	
D00100	1	-0.569450	0.708119	-0.804	0.4217	
D00101	1	0.719578	0.643309	1.119	0.2640	
D00110	1	2.217013	0.636766	3.482	0.0005	
D00121	1	-1.236703	1.080006	-1.145	0.2528	
D00130	1	0.211477	0.761254	0.278	0.7813	
D00140	1	-0.078936	0.697141	-0.113	0.9099	
D00141	1	0.653108	0.721769	0.905	0.3660	
D00150	1	0.463945	0.713908	0.650	0.5161	
D00160	1	0.750216	0.731073	1.026	0.3054	
D00180	1	-0.017850	0.644000	-0.028	0.9779	
D00190	1	-1.030535	0.695561	-1.482	0.1392	
D00200	1	-1.067410	0.925349	-1.154	0.2493	
D00210	1	-1.250879	0.973307	-1.285	0.1994	
D00220	1	-0.427526	0.781920	-0.547	0.5848	
D00230	1	0.716692	0.706717	1.014	0.3111	
D00250	1	2.710078	0.636354	4.259	0.0001	
D00260	1	0.235751	0.764064	0.309	0.7578	
D00270	1	1.570214	0.616642	2.546	0.0112	
D00280	1	-1.465183	0.773478	-1.894	0.0589	
D00290	1	2.098028	0.647854	3.238	0.0013	
D00310	1	0.252723	0.722455	0.350	0.7267	
D00320	1	0.832301	0.812836	1.024	0.3064	
D00332	1	-0.018917	0.735921	-0.026	0.9795	
D00333	1	-0.588130	0.714800	-0.823	0.4111	
D00334	1	1.037790	0.654451	1.586	0.1135	
D00337	1	-0.131516	0.683040	-0.193	0.8474	
D00340	1	-0.074472	0.855434	-0.087	0.9307	
D00350	1	0.482645	0.734353	0.657	0.5114	
D00361	1	-0.378621	0.639518	-0.592	0.5541	
D00362	1	0.123517	0.704884	0.175	0.8610	
D00363	1	-1.938800	0.840933	-2.306	0.0216	
D00364	1	-0.0030216	0.594652	-0.005	0.9959	
D00370	1	0.483129	0.614187	0.787	0.4319	
D00380	1	0.575460	0.655961	0.877	0.3808	
D00390	1	0.484590	0.714970	0.678	0.4983	
D00392	1	0.875343	0.773214	1.132	0.2582	
D00400	1	-0.406716	1.038012	-0.392	0.6954	
D00410	1	2.227044	0.637230	3.495	0.0005	
D00423	1	-0.593310	0.662905	-0.895	0.3713	
D00424	1	-0.599077	0.744043	-0.805	0.4212	
D00430	1	0.166074	0.821832	0.202	0.8400	
D00441	1	0.204656	0.618355	0.331	0.7408	

APPENDIX FOR TABLE 2.11(b)

(continued)

DEP VARIABLE: TCPB TDTAL UNIT COST PER BILL

SDURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	26843.469	288.639	546.245	0.0001
ERROR	433	228.800	0.528406		
U TOTAL	526	27072.268			

ROOT MSE	0.726916	R-SQUARE	0.9915
DEP MEAN	6.914459	ADJ R-SQ	0.9898
C.V.	10.51298		

NDTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
DNY	1	0.101558	0.584122	0.174	0.8621	NY BEFORE FIXED PRICE=1
DNYFP	1	-1.326508	0.844071	-1.572	0.1168	NY AFTER FIXED PRICE =1
DMO	1	0.009547591	0.758660	0.013	0.9900	MO BEFORE FIXED PRICE=1
DMOFP	1	-0.098373	0.873825	-0.113	0.9104	MO AFTER FIXED PRICE=1
BILLINV	1	0.005462342	0.013845	0.395	0.6934	BILLS INVERSE (000000)
BILLRET	1	0.104083	0.039987	2.603	0.0096	TDTAL % OF BILLS RETURNED
DEVRAT	1	0.042351	0.021581	1.962	0.0504	DEVELDPMENT RATE
AUDPCT	1	0.006599547	0.00217037	3.041	0.0025	PCT DF PROVEDERS AUDITED
PTTDT	1	0.011783	0.009134061	1.290	0.1977	AV INTERMED PRDCESSING TIME
MRB	1	0.002568126	0.003720063	0.690	0.4903	% BILLS RECVD IN MACHINE READABLE FDRM
PIPPCT	1	0.000484858	0.006445393	0.075	0.9401	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.000636128	0.001625571	-0.391	0.6957	% DF SETTLED HOSP CDST REPDRTS/PRIOR FY
RENT	1	-.0000219746	0.000375904	-0.058	0.9534	RENT PER SQ FOOT
DTENTY	1	0.248185	0.084892	2.924	0.0036	DATA ENTRY SALARY
OPMGR	1	-0.056712	0.022710	-2.497	0.0129	DPERATIDNS MANAGER SALARY (000)
SRSYANL	1	-0.025834	0.020208	-1.278	0.2018	SR SYS ANALYST SALARY (000)
CLRK	1	0.057695	0.010411	5.542	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.046850	0.019979	-2.345	0.0195	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	0.033345	0.037824	0.882	0.3785	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.089098	0.019376	-4.598	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.152455	0.033890	-4.498	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.588721	0.132871	-4.431	0.0001	
YR78	1	-1.282611	0.141039	-9.094	0.0001	
YR79	1	-1.771303	0.158532	-11.173	0.0001	
YR80	1	-2.286578	0.178714	-12.795	0.0001	
YR81	1	-2.450055	0.209819	-11.677	0.0001	
YR82	1	-2.872915	0.234886	-12.231	0.0001	
YR83	1	-2.660138	0.262388	-10.138	0.0001	
NOMDDEL	1	0.285944	0.237377	1.205	0.2290	
D00020	1	0.175541	0.731441	0.240	0.8104	
D00030	1	1.167557	0.698748	1.671	0.0955	
D00040	1	0.690870	0.790095	0.874	0.3824	

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00443	1	1.152287	0.653912	1.762	0.0788	
D00444	1	-0.102596	0.694263	-0.148	0.8826	
D00450	1	-0.198570	0.782243	-0.254	0.7997	
D00460	1	2.694289	0.662103	4.069	0.0001	
D00470	1	6.379082	0.946907	6.737	0.0001	
D17120	1	1.148445	0.750412	1.530	0.1266	
D52280	1	1.935412	1.080612	1.791	0.0740	
D53310	1	1.216358	0.735656	1.653	0.0990	
D56360	1	4.962295	0.857873	5.784	0.0001	
D69999	1	0.898984	1.100522	0.817	0.4145	
D79999	1	5.120405	1.396039	3.668	0.0003	
D10	1	0.951322	0.746070	1.275	0.2030	
D302	1	-1.695368	0.803169	-2.111	0.0354	

TEST: NY_1	NUMERATOR:	3.31324	DF:	1	F VALUE:	6.2982
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.0125
TEST: NY0	NUMERATOR:	1.1241	DF:	1	F VALUE:	2.1368
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.1445
TEST: NY1	NUMERATOR:	0.090142	DF:	1	F VALUE:	0.1714
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.6791
TEST: MO_1	NUMERATOR:	3.02506	DF:	1	F VALUE:	5.7504
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.0169
TEST: MO0	NUMERATOR:	0.219397	DF:	1	F VALUE:	0.4171
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.5188
TEST: MO1	NUMERATOR:	0.643964	DF:	1	F VALUE:	1.2241
	DENOMINATOR:	0.526065	DF:	432	PROB >F :	0.2692

APPENDIX FOR TABLE 2.11(b)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	-0.603740	0.771480	-0.783	0.4343	
D00050	1	0.062617	0.709208	0.088	0.9297	
D00060	1	0.709911	0.668206	1.062	0.2886	
D00070	1	1.534738	0.606705	2.530	0.0118	
D00080	1	0.938869	0.725222	1.295	0.1961	
D00090	1	-1.457549	0.900653	-1.618	0.1063	
D00100	1	-0.792676	0.700158	-1.132	0.2582	
D00101	1	-0.147005	0.678199	-0.217	0.8285	
D00110	1	1.994251	0.629650	3.167	0.0016	
D00121	1	-1.772599	0.872027	-2.033	0.0427	
D00130	1	-0.626182	0.730129	-0.858	0.3916	
D00140	1	-0.887603	0.723030	-1.228	0.2203	
D00141	1	-0.227563	0.754818	-0.301	0.7632	
D00150	1	-0.456269	0.751498	-0.607	0.5441	
D00160	1	-0.442526	0.790343	-0.560	0.5758	
D00180	1	-0.119513	0.626572	-0.191	0.8488	
D00190	1	-1.197656	0.670600	-1.786	0.0748	
D00200	1	-1.202375	0.748063	-1.607	0.1087	
D00210	1	-1.427472	0.756223	-1.888	0.0597	
D00220	1	-1.252341	0.780320	-1.605	0.1092	
D00230	1	-0.401514	0.769001	-0.522	0.6019	
D00250	1	2.199856	0.641943	3.427	0.0007	
D00260	1	-0.607650	0.789165	-0.770	0.4417	
D00270	1	1.140395	0.618383	1.844	0.0658	
D00280	1	-1.995469	0.761075	-2.622	0.0091	
D00290	1	1.757034	0.640778	2.742	0.0064	
D00310	1	-1.052878	0.766241	-1.374	0.1701	
D00320	1	-0.250331	0.853957	-0.293	0.7696	
D00332	1	-0.885908	0.744547	-1.190	0.2348	
D00333	1	-0.926137	0.703346	-1.317	0.1886	
D00334	1	0.413223	0.669310	0.617	0.5373	
D00337	1	-0.367886	0.676703	-0.544	0.5870	
D00340	1	-1.510646	0.937632	-1.611	0.1079	
D00350	1	-0.054355	0.737524	-0.074	0.9413	
D00361	1	-0.572074	0.621440	-0.921	0.3578	
D00362	1	-0.267501	0.692844	-0.386	0.6996	
D00363	1	-2.287813	0.702831	-3.255	0.0012	
D00364	1	-0.483102	0.601987	-0.803	0.4227	
D00370	1	0.221403	0.609893	0.363	0.7168	
D00380	1	-0.094200	0.673310	-0.140	0.8888	
D00390	1	-0.882269	0.799280	-1.104	0.2703	
D00392	1	0.090022	0.792301	0.114	0.9096	
D00400	1	-1.890072	1.008009	-1.875	0.0615	
D00410	1	1.890403	0.634817	2.978	0.0031	
D00423	1	-1.347705	0.683002	-1.973	0.0491	
D00424	1	-1.204025	0.750607	-1.604	0.1094	
D00430	1	-0.313243	0.820130	-0.382	0.7027	
D00441	1	-0.446707	0.637170	-0.701	0.4836	
D00443	1	1.232253	0.643954	1.914	0.0563	

APPENDIX FOR TABLE 2.11(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-0.108182	0.685017	-0.158	0.8746	
D00450	1	-0.816036	0.753124	-1.084	0.2792	
D00460	1	2.833112	0.652851	4.340	0.0001	
D00470	1	5.949000	0.913497	6.512	0.0001	
D17120	1	1.308791	0.736452	1.777	0.0762	
D52280	1	0.147047	1.138215	0.129	0.8973	
D53310	1	0.460854	0.748802	0.615	0.5386	
D56360	1	4.344335	0.863753	5.030	0.0001	
D69999	1	-0.185190	0.878886	-0.211	0.8332	
D79999	1	3.651991	1.384981	2.637	0.0087	
D10	1	-0.346572	0.824566	-0.420	0.6745	
D302	1	-0.889033	0.826547	-1.076	0.2827	

TEST: NY_1	NUMERATOR:	17.6594	DF: 1	F VALUE:	34.4526
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.0001
TEST: NYO	NUMERATOR:	9.22753	DF: 1	F VALUE:	18.0024
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.0001
TEST: NY1	NUMERATOR:	3.50833	DF: 1	F VALUE:	6.8446
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.0092
TEST: MO_1	NUMERATOR:	3.82939	DF: 1	F VALUE:	7.4709
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.0065
TEST: MOO	NUMERATOR:	0.380447	DF: 1	F VALUE:	0.7422
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.3894
TEST: MO1	NUMERATOR:	0.523129	DF: 1	F VALUE:	1.0206
	DENOMINATOR:	0.512572	DF: 433	PROB >F :	0.3129

APPENDIX FOR TABLE 2.11(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-0.133144	0.695749	-0.191	0.8483	
D00450	1	0.172229	0.720881	0.239	0.8113	
D00460	1	2.496285	0.697091	3.581	0.0004	
D00470	1	6.119705	0.927426	6.599	0.0001	
D17120	1	1.288851	0.753356	1.711	0.0878	
D52280	1	2.709788	0.968935	2.797	0.0054	
D53310	1	1.524206	0.712946	2.138	0.0331	
D56360	1	5.133963	0.857829	5.985	0.0001	
D69999	1	1.705121	0.748913	2.277	0.0233	
D79999	1	6.071955	1.345800	4.512	0.0001	
D10	1	1.207080	0.729057	1.656	0.0985	
D302	1	-1.876845	0.856959	-2.190	0.0290	

TEST: NY_1	NUMERATOR:	9.94858	DF:	1	F VALUE:	18.8275
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.0001
TEST: NY0	NUMERATOR:	3.44141	DF:	1	F VALUE:	6.5128
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.0111
TEST: NY1	NUMERATOR:	0.309216	DF:	1	F VALUE:	0.5852
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.4447
TEST: MO_1	NUMERATOR:	2.26875	DF:	1	F VALUE:	4.2936
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.0388
TEST: MO0	NUMERATOR:	.0215266	DF:	1	F VALUE:	0.0407
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.8401
TEST: MO1	NUMERATOR:	1.47088	DF:	1	F VALUE:	2.7836
	DENOMINATOR:	0.528406	DF:	433	PROB >F :	0.0960

APPENDIX FOR TABLE 2.11(c)

(continued)

DEP VARIABLE: TCPB TOTAL UNIT COST PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	26850.325	288.713	563.263	0.0001
ERROR	433	221.944	0.512572		
U TOTAL	526	27072.268			

ROOT MSE	0.715942	R-SQUARE	0.9918
DEP MEAN	6.914459	ADJ R-SQ	0.9901
C.V.	10.35427		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
ONY	1	-0.197356	0.580897	-0.340	0.7342	NY BEFORE FIXED PRICE=1
DNYFP	1	-2.805638	0.905224	-3.099	0.0021	NY AFTER FIXED PRICE =1
OMO	1	-0.955159	0.787396	-1.213	0.2258	MO BEFORE FIXED PRICE=1
OMOFP	1	-1.415433	0.924766	-1.531	0.1266	MO AFTER FIXED PRICE=1
LNBILL	1	0.626435	0.170266	3.679	0.0003	LN OF BILLS PROCESSED
BILLRET	1	0.115972	0.039517	2.935	0.0035	TOTAL % OF BILLS RETURNED
DEVRAT	1	0.046759	0.021244	2.201	0.0283	DEVELOPMENT RATE
AUDPCT	1	0.006438898	0.002131479	3.021	0.0027	PCT OF PROVEDERS AUDITED
PTTOT	1	0.017579	0.008804065	1.997	0.0465	AV INTERMED PROCESSING TIME
MRB	1	0.0003385028	0.00371346	0.091	0.9274	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	-0.00162938	0.006337978	-0.257	0.7972	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.0010109	0.001583277	-0.638	0.5235	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.0002051005	0.0003751332	0.547	0.5848	RENT PER SQ FOOT
DTENTY	1	0.203913	0.084477	2.414	0.0162	DATA ENTRY SALARY
OPMGR	1	-0.052838	0.022378	-2.361	0.0187	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	-0.029878	0.019898	-1.502	0.1339	SR SYS ANALYST SALARY (000)
CLRK	1	0.035945	0.011707	3.070	0.0023	CLERICAL WAGE PER WEEK
OUTPCT	1	-0.095311	0.022952	-4.153	0.0001	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	0.028225	0.037278	0.757	0.4494	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-0.128559	0.021414	-6.004	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-0.137154	0.032213	-4.258	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	-0.503625	0.132918	-3.789	0.0002	
YR78	1	-1.219767	0.139865	-8.721	0.0001	
YR79	1	-1.626809	0.161043	-10.102	0.0001	
YR80	1	-2.221237	0.176809	-12.563	0.0001	
YR81	1	-2.488852	0.206851	-12.032	0.0001	
YR82	1	-2.910469	0.231559	-12.569	0.0001	
YR83	1	-2.625176	0.258600	-10.151	0.0001	
NOMODEL	1	0.194996	0.235112	0.829	0.4073	
000020	1	-1.411626	0.831768	-1.697	0.0904	
000030	1	0.249992	0.727475	0.344	0.7313	
000040	1	-0.837249	0.861752	-0.972	0.3318	

APPENDIX FOR TABLE 2.11(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	72.619592	65.332863	1.112	0.2670	
D00050	1	14.669291	58.057980	0.253	0.8006	
D00060	1	206.548	54.785002	3.770	0.0002	
D00070	1	5.185940	51.027469	0.102	0.9191	
D00080	1	406.054	60.892119	6.668	0.0001	
D00090	1	370.455	65.529690	5.653	0.0001	
D00100	1	17.355621	58.703081	0.296	0.7676	
D00101	1	-48.188679	52.333522	-0.921	0.3577	
D00110	1	-106.598	52.849691	-2.017	0.0443	
D00121	1	184.335	74.769973	2.465	0.0141	
D00130	1	58.918161	56.668488	1.040	0.2991	
D00140	1	59.547454	57.038634	1.044	0.2971	
D00141	1	55.981133	59.845316	0.935	0.3501	
D00150	1	87.335583	58.787739	1.486	0.1381	
D00160	1	20.616900	57.954324	0.356	0.7222	
D00180	1	-147.715	52.752082	-2.800	0.0053	
D00190	1	61.044152	56.212960	1.086	0.2781	
D00200	1	-22.977137	65.592487	-0.350	0.7263	
D00210	1	24.271704	68.317971	0.355	0.7226	
D00220	1	106.670	60.855130	1.753	0.0803	
D00230	1	-9.238810	57.455314	-0.161	0.8723	
D00250	1	-37.964044	52.834621	-0.719	0.4728	
D00260	1	28.662433	63.431467	0.452	0.6516	
D00270	1	-37.310346	50.695045	-0.736	0.4621	
D00280	1	209.504	61.924500	3.383	0.0008	
D00290	1	37.992679	53.596971	0.709	0.4788	
D00310	1	79.205627	53.053151	1.493	0.1362	
D00320	1	288.330	67.487497	4.272	0.0001	
D00332	1	146.052	57.681945	2.532	0.0117	
D00333	1	272.557	58.565255	4.654	0.0001	
D00334	1	98.269442	53.938232	1.822	0.0692	
D00337	1	87.113682	56.672299	1.537	0.1250	
D00340	1	252.645	70.771709	3.570	0.0004	
D00350	1	124.926	60.426278	2.067	0.0393	
D00361	1	-153.473	51.873280	-2.959	0.0033	
D00362	1	236.258	56.709298	4.166	0.0001	
D00363	1	-68.929403	59.402342	-1.160	0.2465	
D00364	1	4.301407	49.029385	0.088	0.9301	
D00370	1	179.527	50.947055	3.524	0.0005	
D00380	1	-32.143551	53.900633	-0.596	0.5513	
D00390	1	146.989	56.028331	2.623	0.0090	
D00392	1	418.137	64.191653	6.514	0.0001	
D00400	1	196.524	73.126173	2.687	0.0075	
D00410	1	53.068844	52.906445	1.003	0.3164	
D00423	1	59.995658	53.446867	1.123	0.2623	
D00424	1	59.719651	61.751921	0.967	0.3340	
D00430	1	94.719094	67.808543	1.397	0.1632	
D00441	1	-33.483978	51.251075	-0.653	0.5139	
D00443	1	-38.583069	53.996874	-0.715	0.4753	

APPENDIX FOR TABLE 2.12(a)

(continued)

DEP VARIABLE: BILLPAY BENEFITS PAID PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	290155633	3119953	860.334	0.0001
ERROR	433	1570251	3626.445		
U TOTAL	526	291725884			

ROOT MSE	60.219974	R-SQUARE	0.9946
DEP MEAN	720.873	ADJ R-SQ	0.9935
C.V.	8.353752		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	-11.668666	48.593571	-0.240	0.8103	NY BEFORE FIXED PRICE=1
DNYFP	1	-104.024	95.961285	-1.084	0.2790	NY AFTER FIXED PRICE =1
DMO	1	307.538	62.763757	4.900	0.0001	MO BEFORE FIXED PRICE=1
DMOFP	1	303.180	72.867419	4.161	0.0001	MO AFTER FIXED PRICE=1
BILLPRD	1	0.018852	0.020820	0.905	0.3657	TOTAL BILLS PROCESSED (000)
BILLRET	1	-0.815021	3.312828	-0.246	0.8058	TOTAL % OF BILLS RETURNED
DEVRAT	1	-4.886831	1.789736	-2.730	0.0066	DEVELOPMENT RATE
AUDPCT	1	0.090074	0.179289	0.502	0.6156	PCT OF PROVEDERS AUDITED
PTTOT	1	-0.702907	0.732116	-0.960	0.3375	AV INTERMED PROCESSING TIME
MRB	1	0.229065	0.311717	0.735	0.4628	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	-1.238530	0.534210	-2.318	0.0209	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.056110	0.133285	-0.421	0.6740	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.113230	0.031109	3.640	0.0003	RENT PER SQ FOOT
DTENTY	1	-4.577694	7.042965	-0.650	0.5161	DATA ENTRY SALARY
OPMGR	1	2.293917	1.882404	1.219	0.2237	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	8.142723	1.672876	4.867	0.0001	SR SYS ANALYST SALARY (000)
CLRK	1	4.123325	0.836024	4.932	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-5.382434	1.609785	-3.344	0.0009	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-5.150053	3.151910	-1.634	0.1030	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-12.083970	1.586185	-7.618	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-17.784589	2.697570	-6.593	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	25.409214	11.010824	2.308	0.0215	
YR78	1	33.701705	11.694989	2.882	0.0042	
YR79	1	58.608356	13.148999	4.457	0.0001	
YR80	1	91.223048	14.859441	6.139	0.0001	
YR81	1	106.214	17.459634	6.083	0.0001	
YR82	1	180.677	19.645351	9.197	0.0001	
YR83	1	112.993	22.242667	5.080	0.0001	
NOMODEL	1	-26.657201	19.684546	-1.354	0.1764	
D00020	1	-34.097785	60.499331	-0.564	0.5733	
D00030	1	271.669	57.845287	4.696	0.0001	
D00040	1	219.295	74.323283	2.951	0.0033	

DEP VARIABLE: BILLPAY BENEFITS PAID PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	94	290157502	3086782	850.233	0.0001
ERROR	432	1568381	3630.513		
U TOTAL	526	291725884			

ROOT MSE	60.253734	R-SQUARE	0.9946
DEP MEAN	720.873	ADJ R-SQ	0.9935
C.V.	8.358435		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	-17.547387	49.306198	-0.356	0.7221	NY BEFORE FIXED PRICE=1
DNYFP	1	-123.821	99.900274	-1.239	0.2159	NY AFTER FIXED PRICE =1
DMO	1	299.784	63.721788	4.705	0.0001	MO BEFORE FIXED PRICE=1
DMOFP	1	284.361	77.481743	3.670	0.0003	MO AFTER FIXED PRICE=1
BILLPRO	1	0.058667	0.059268	0.990	0.3228	TOTAL BILLS PROCESSED (000)
BILLSQ	1	-8.49966E-08	1.18451E-07	-0.718	0.4734	BILLPRO SQUARED (0000)
BILLRET	1	-0.947949	3.319857	-0.286	0.7754	TOTAL % OF BILLS RETURNED
DEVRAT	1	-4.841801	1.791838	-2.702	0.0072	DEVELOPMENT RATE
AUDPCT	1	0.090033	0.179390	0.502	0.6160	PCT OF PROVEDERS AUDITED
PTTOT	1	-0.679379	0.733260	-0.927	0.3547	AV INTERMED PROCESSING TIME
MRB	1	0.182385	0.318603	0.572	0.5673	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	-1.281170	0.537803	-2.382	0.0176	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.051195	0.133536	-0.383	0.7016	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.118017	0.031833	3.707	0.0002	RENT PER SQ FOOT
DTENTY	1	-4.422791	7.050219	-0.627	0.5308	DATA ENTRY SALARY
OPMGR	1	2.339663	1.884538	1.242	0.2151	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	8.213173	1.676691	4.898	0.0001	SR SYS ANALYST SALARY (000)
CLRK	1	4.064277	0.840531	4.835	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-5.433921	1.612284	-3.370	0.0008	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-4.854639	3.180434	-1.526	0.1276	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-12.283463	1.611240	-7.624	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-17.300316	2.782177	-6.218	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	24.646568	11.068144	2.227	0.0265	
YR78	1	32.195756	11.888256	2.708	0.0070	
YR79	1	57.273796	13.287176	4.310	0.0001	
YR80	1	89.194761	15.134079	5.894	0.0001	
YR81	1	102.759	18.120643	5.671	0.0001	
YR82	1	175.820	20.789048	8.457	0.0001	
YR83	1	108.152	23.255062	4.651	0.0001	
NOMODEL	1	-29.480428	20.084712	-1.468	0.1429	
D00020	1	-42.235161	61.586312	-0.686	0.4932	
D00030	1	265.586	58.495351	4.540	0.0001	

APPENDIX FOR TABLE 2.12(b)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-130.089	57.640115	-2.257	0.0245	
D00450	1	66.783114	60.928324	1.096	0.2736	
D00460	1	-51.242612	54.639115	-0.938	0.3489	
D00470	1	27.343727	77.136471	0.354	0.7231	
D17120	1	56.206777	61.988706	0.907	0.3651	
D52280	1	431.252	79.665206	5.413	0.0001	
D53310	1	207.774	58.882925	3.529	0.0005	
D56360	1	127.356	70.730460	1.801	0.0725	
D69999	1	145.060	73.784506	1.966	0.0499	
D79999	1	89.912721	106.342	0.846	0.3983	
D10	1	183.772	60.376609	3.044	0.0025	
D302	1	-151.110	66.612883	-2.268	0.0238	

TEST: NY_75	NUMERATOR:	17207.1	DF:	1	F VALUE:	4.7449
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.0299
TEST: NYO	NUMERATOR:	5240.27	DF:	1	F VALUE:	1.4450
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.2300
TEST: NY75	NUMERATOR:	185.051	DF:	1	F VALUE:	0.0510
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.8214
TEST: MO_75	NUMERATOR:	11374.9	DF:	1	F VALUE:	3.1367
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.0773
TEST: MDO	NUMERATOR:	34.3087	DF:	1	F VALUE:	0.0095
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.9226
TEST: MO75	NUMERATOR:	9013.32	DF:	1	F VALUE:	2.4854
	DENOMINATOR:	3626.45	DF:	433	PROB >F :	0.1156

APPENDIX FOR TABLE 2.12(a)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00040	1	181.035	91.504174	1.978	0.0485	
D00041	1	43.868105	76.672039	0.572	0.5675	
D00050	1	5.821704	59.384649	0.098	0.9220	
D00060	1	199.111	55.786950	3.569	0.0004	
D00070	1	5.298951	51.056319	0.104	0.9174	
D00080	1	402.742	61.100810	6.591	0.0001	
D00090	1	339.988	78.113489	4.352	0.0001	
D00100	1	15.019580	58.826141	0.255	0.7986	
D00101	1	-55.856730	53.442143	-1.045	0.2965	
D00110	1	-105.573	52.898613	-1.996	0.0466	
D00121	1	148.796	89.720246	1.658	0.0980	
D00130	1	38.820915	63.240265	0.614	0.5396	
D00140	1	52.480232	57.914195	0.906	0.3653	
D00141	1	53.741801	59.960133	0.896	0.3706	
D00150	1	81.896567	59.307059	1.381	0.1680	
D00160	1	7.660194	60.733045	0.126	0.8997	
D00180	1	-153.983	53.499529	-2.878	0.0042	
D00190	1	51.540132	57.782901	0.892	0.3729	
D00200	1	-51.699195	76.872272	-0.673	0.5016	
D00210	1	-6.718371	80.856299	-0.083	0.9338	
D00220	1	90.434901	64.957039	1.392	0.1646	
D00230	1	-17.789940	58.709669	-0.303	0.7620	
D00250	1	-38.028251	52.864317	-0.719	0.4723	
D00260	1	28.000181	63.473738	0.441	0.6593	
D00270	1	-42.450431	51.226762	-0.829	0.4077	
D00280	1	197.287	64.255767	3.070	0.0023	
D00290	1	41.257471	53.819678	0.767	0.4437	
D00310	1	59.110339	60.017103	0.985	0.3252	
D00320	1	288.407	67.525417	4.271	0.0001	
D00332	1	131.582	61.135791	2.152	0.0319	
D00333	1	265.659	59.381190	4.474	0.0001	
D00334	1	93.549997	54.367753	1.721	0.0860	
D00337	1	85.611571	56.742697	1.509	0.1321	
D00340	1	248.348	71.064121	3.495	0.0005	
D00350	1	119.086	61.005489	1.952	0.0516	
D00361	1	-161.612	53.127227	-3.042	0.0025	
D00362	1	225.874	58.557418	3.857	0.0001	
D00363	1	-95.272724	69.859534	-1.364	0.1733	
D00364	1	0.130811	49.399973	0.003	0.9979	
D00370	1	177.951	51.022876	3.488	0.0005	
D00380	1	-37.746432	54.493151	-0.693	0.4889	
D00390	1	132.908	59.395240	2.238	0.0258	
D00392	1	417.499	64.233794	6.500	0.0001	
D00400	1	163.778	86.231582	1.899	0.0582	
D00410	1	53.305931	52.937136	1.007	0.3145	
D00423	1	50.559266	55.070014	0.918	0.3591	
D00424	1	60.953949	61.810480	0.986	0.3246	
D00430	1	89.253703	68.272739	1.307	0.1918	
D00441	1	-35.656518	51.369108	-0.694	0.4880	

APPENDIX FOR TABLE 2.12(b)

(continued)

DEP VARIABLE: BILLPAY BENEFITS PAIO PER BILL

SOURCE	OF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MOOEL	93	290155007	3119946	859.989	0.0001
ERROR	433	1570876	3627.890		
U TOTAL	526	291725884			

ROOT MSE	60.231967	R-SQUARE	0.9946
OEP MEAN	720.873	AOJ R-SQ	0.9935
C.V.	8.355416		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REOEFINEO.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
ONY	1	-8.012994	48.400125	-0.166	0.8686	NY BEFORE FIXEO PRICE=1
ONYFP	1	-53.289973	69.939455	-0.762	0.4465	NY AFTER FIXEO PRICE =1
OMO	1	306.962	62.862309	4.883	0.0001	MO BEFORE FIXED PRICE=1
OMOFP	1	307.371	72.404870	4.245	0.0001	MO AFTER FIXEO PRICE=1
BILLINV	1	-0.922893	1.147212	-0.804	0.4216	BILLS INVERSE (OOOOOO)
BILLRET	1	-0.797131	3.313332	-0.241	0.8100	TOTAL % OF BILLS RETURNEO
OEVRAT	1	-4.923598	1.788159	-2.753	0.0061	DEVELOPMENT RATE
AUDPCT	1	0.076736	0.179836	0.427	0.6698	PCT OF PROVEDERS AUOITEO
PTTOT	1	-0.541212	0.756845	-0.715	0.4749	AV INTERMEO PROCESSING TIME
MRB	1	0.282689	0.308243	0.917	0.3596	% BILLS RECVO IN MACHINE READABLE FORM
PIPPCT	1	-1.230970	0.534063	-2.305	0.0216	PCT OF PROVIOERS ON PIP
SETCRO	1	-0.080508	0.134694	-0.598	0.5503	% OF SETTLEO HOSP COST REPORTS/PRIOR FY
RENT	1	0.110856	0.031147	3.559	0.0004	RENT PER SQ FOOT
OTENTY	1	-4.037489	7.034158	-0.574	0.5663	DATA ENTRY SALARY
OPMGR	1	2.141630	1.881752	1.138	0.2557	OPERATIONS MANAGER SALARY (OOO)
SRSYANL	1	8.011865	1.674395	4.785	0.0001	SR SYS ANALYST SALARY (OOO)
CLRK	1	4.303606	0.862612	4.989	0.0001	CLERICAL WAGE PER WEEK
OUTPCT	1	-5.712320	1.655432	-3.451	0.0006	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-5.426811	3.134121	-1.732	0.0841	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-12.171550	1.605459	-7.581	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-17.222418	2.808151	-6.133	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	25.552448	11.009646	2.321	0.0208	
YR78	1	33.927068	11.686437	2.903	0.0039	
YR79	1	58.930105	13.135895	4.486	0.0001	
YR80	1	91.974005	14.808142	6.211	0.0001	
YR81	1	107.444	17.385564	6.180	0.0001	
YR82	1	183.344	19.462536	9.420	0.0001	
YR83	1	117.099	21.741416	5.386	0.0001	
NOMOOEL	1	-25.650567	19.668951	-1.304	0.1929	
DOOO2O	1	-34.305524	60.606940	-0.566	0.5717	
OOOO3O	1	271.707	57.897998	4.693	0.0001	
OOOO4O	1	243.049	65.467024	3.713	0.0002	

APPENDIX FOR TABLE 2.12(c)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=O	PROB > |T|	VARIABLE LABEL
D00443	1	-34.520627	54.322959	-0.635	0.5255	
D00444	1	-129.691	57.675108	-2.249	0.0250	
D00450	1	50.634035	64.983915	0.779	0.4363	
D00460	1	-46.902055	55.003374	-0.853	0.3943	
D00470	1	38.254090	78.663130	0.486	0.6270	
D17120	1	51.707537	62.339583	0.829	0.4073	
D52280	1	401.622	89.770583	4.474	0.0001	
D53310	1	196.120	61.113746	3.209	0.0014	
D56360	1	121.329	71.266771	1.702	0.0894	
D69999	1	106.363	91.424572	1.163	0.2453	
D79999	1	56.804900	115.974	0.490	0.6245	
D10	1	173.831	61.978892	2.805	0.0053	
0302	1	-148.885	66.722317	-2.231	0.0262	

TEST: NY_75	NUMERATOR:	18979.9	DF:	1	F VALUE:	5.2279
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.0227
TEST: NYO	NUMERATOR:	6523.44	DF:	1	F VALUE:	1.7968
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.1808
TEST: NY75	NUMERATOR:	564.917	DF:	1	F VALUE:	0.1556
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.6934
TEST: MO_75	NUMERATOR:	13205.9	DF:	1	F VALUE:	3.6375
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.0572
TEST: MOO	NUMERATOR:	384.218	DF:	1	F VALUE:	0.1058
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.7451
TEST: MO75	NUMERATOR:	5732.6	DF:	1	F VALUE:	1.5790
	DENOMINATOR:	3630.51	DF:	432	PROB >F :	0.2096

APPENDIX FOR TABLE 2.12(b)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-127.384	57.649505	-2.210	0.0277	
D00450	1	74.188605	59.731916	1.242	0.2149	
D00460	1	-37.436729	57.760702	-0.648	0.5172	
D00470	1	23.460048	76.846232	0.305	0.7603	
D17120	1	52.406872	62.422780	0.840	0.4016	
D52280	1	431.183	80.285632	5.371	0.0001	
D53310	1	207.354	59.074468	3.510	0.0005	
D56360	1	124.743	71.079387	1.755	0.0800	
D69999	1	173.218	62.054708	2.791	0.0055	
D79999	1	76.031508	111.513	0.682	0.4957	
D10	1	184.294	60.409423	3.051	0.0024	
D302	1	-130.954	71.007357	-1.844	0.0658	

TEST: NY_75	NUMERATOR:	24412.1	DF:	1	F VALUE:	6.7290
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.0098
TEST: NYO	NUMERATOR:	3459.35	DF:	1	F VALUE:	0.9535
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.3294
TEST: NY75	NUMERATOR:	1490.82	DF:	1	F VALUE:	0.4109
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.5218
TEST: MO_75	NUMERATOR:	10283.5	DF:	1	F VALUE:	2.8346
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.0930
TEST: MOO	NUMERATOR:	0.309373	DF:	1	F VALUE:	0.0001
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.9926
TEST: MO75	NUMERATOR:	10510.4	DF:	1	F VALUE:	2.8971
	DENOMINATOR:	3627.89	DF:	433	PROB >F :	0.0895

APPENDIX FOR TABLE 2.12(c)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	87.580846	61.660353	1.420	0.1562	
D00050	1	15.565662	58.032483	0.268	0.7887	
D00060	1	207.809	54.721738	3.798	0.0002	
D00070	1	9.319540	51.150565	0.182	0.8555	
D00080	1	400.572	61.505966	6.513	0.0001	
D00090	1	389.864	59.995439	6.498	0.0001	
D00100	1	16.812154	58.795230	0.286	0.7751	
D00101	1	-43.732868	51.989288	-0.841	0.4007	
D00110	1	-101.429	52.965044	-1.915	0.0561	
D00121	1	208.823	67.658295	3.086	0.0022	
D00130	1	71.202838	54.297706	1.311	0.1904	
D00140	1	61.936861	56.862335	1.089	0.2767	
D00141	1	55.112999	59.905528	0.920	0.3581	
D00150	1	87.858069	58.793417	1.494	0.1358	
D00160	1	21.439756	57.985997	0.370	0.7118	
D00180	1	-138.686	52.664207	-2.633	0.0088	
D00190	1	65.167831	55.842250	1.167	0.2439	
D00200	1	-4.344970	60.849354	-0.071	0.9431	
D00210	1	48.076709	61.179581	0.786	0.4324	
D00220	1	110.549	60.324294	1.833	0.0676	
D00230	1	-9.239237	57.521293	-0.161	0.8725	
D00250	1	-34.315065	52.845990	-0.649	0.5165	
D00260	1	27.878542	63.465130	0.439	0.6607	
D00270	1	-32.452320	50.556786	-0.642	0.5213	
D00280	1	211.839	61.711113	3.433	0.0007	
D00290	1	40.012035	53.651453	0.746	0.4562	
D00310	1	90.200219	50.863720	1.773	0.0769	
D00320	1	287.250	67.528291	4.254	0.0001	
D00332	1	151.687	56.850604	2.668	0.0079	
D00333	1	276.149	58.260856	4.740	0.0001	
D00334	1	100.122	53.849613	1.859	0.0637	
D00337	1	88.654579	56.633072	1.565	0.1182	
D00340	1	247.139	71.495034	3.457	0.0006	
D00350	1	124.871	60.508363	2.064	0.0396	
D00361	1	-149.951	51:612996	-2.905	0.0039	
D00362	1	236.545	56.754110	4.168	0.0001	
D00363	1	-52.645097	55.493916	-0.949	0.3433	
D00364	1	8.233809	48.952070	0.168	0.8665	
D00370	1	184.093	50.968946	3.612	0.0003	
D00380	1	-30.057341	53.772639	-0.559	0.5765	
D00390	1	150.018	55.653096	2.696	0.0073	
D00392	1	419.909	64.174310	6.543	0.0001	
D00400	1	208.758	69.825830	2.990	0.0030	
D00410	1	54.656146	52.904459	1.033	0.3021	
D00423	1	62.367380	53.239536	1.171	0.2421	
D00424	1	60.896066	61.798822	0.985	0.3250	
D00430	1	91.004982	68.391582	1.331	0.1840	
D00441	1	-30.330754	51.222619	-0.592	0.5541	
D00443	1	-25.836285	56.448219	-0.458	0.6474	

APPENDIX FOR TABLE 2.12(c)

(continued)

MODEL:	A	SSE	7255.043	F RATIO	49.75
		DFE	454	PROB>F	0.0001
DEP VAR:	PTTOT	MSE	15.980271	R-SQUARE	0.8875
	AV INTERMED PROCESSING TIME				

NOTE: NO INTERCEPT TERM IS USED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	PROB>|T|	VARIABLE LABEL
MRB	1	-0.047534	0.016604	-2.8628	0.0044	% BILLS RECVD IN MACHINE READABLE FORM
DNMODEL	1	-5.261267	1.077482	-4.8829	0.0001	NOT ON MODEL A SYSTEM=1
DEVRAT	1	0.288919	0.099370	2.9075	0.0038	DEVELOPMENT RATE
BILLRET	1	1.124831	0.198258	5.6736	0.0001	TOTAL % OF BILLS RETURNED
DNY	1	14.568630	1.034047	14.0889	0.0001	NY BEFORE FIXED PRICE=1
DNYFP	1	10.027927	2.657817	3.7730	0.0002	NY AFTER FIXED PRICE =1
DMO	1	7.532493	1.582674	4.7593	0.0001	MO BEFORE FIXED PRICE=1
DMOFP	1	12.903394	2.386993	5.4057	0.0001	MO AFTER FIXED PRICE=1
D00020	1	2.491822	1.600916	1.5565	0.1203	
D00030	1	10.037859	1.553068	6.4632	0.0001	
D00040	1	3.069122	1.593485	1.9260	0.0547	
D00041	1	10.809957	2.005696	5.3896	0.0001	
D00050	1	8.190412	1.577157	5.1931	0.0001	
D00060	1	6.211055	1.541828	4.0284	0.0001	
D00070	1	5.338923	1.695845	3.1482	0.0018	
D00080	1	5.199813	1.524304	3.4113	0.0007	
D00090	1	11.494785	1.931351	5.9517	0.0001	
D00100	1	11.502438	1.979998	5.8093	0.0001	
D00101	1	10.388816	1.890591	5.4950	0.0001	
D00110	1	4.245965	1.799318	2.3598	0.0187	
D00121	1	4.948277	1.539376	3.2145	0.0014	
D00130	1	10.929935	1.911148	5.7190	0.0001	
D00140	1	5.981600	1.875569	3.1892	0.0015	
D00141	1	2.778095	1.538883	1.8053	0.0717	
D00150	1	6.645232	1.906292	3.4859	0.0005	
D00160	1	9.898104	1.930893	5.1262	0.0001	
D00180	1	3.162304	1.487578	2.1258	0.0341	
D00190	1	11.560965	2.077758	5.5642	0.0001	
D00200	1	13.967034	2.307734	6.0523	0.0001	
D00210	1	8.832860	1.972287	4.4785	0.0001	
D00220	1	4.263909	1.538484	2.7715	0.0058	
D00230	1	7.039266	1.631923	4.3135	0.0001	
D00250	1	5.720930	1.571198	3.6411	0.0003	
D00260	1	2.604922	1.678006	1.5524	0.1213	
D00270	1	4.577350	1.503183	3.0451	0.0025	
D00280	1	10.411689	2.225102	4.6792	0.0001	
D00290	1	14.109851	1.938313	7.2794	0.0001	
D00310	1	10.019283	1.944789	5.1519	0.0001	
D00320	1	1.303982	1.711591	0.7619	0.4465	
D00332	1	11.966288	1.855912	6.4477	0.0001	

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00444	1	-127.614	57.253452	-2.229	0.0263	
000450	1	23.906652	62.945802	0.380	0.7043	
000460	1	-38.325504	54.565004	-0.702	0.4828	
000470	1	9.079351	76.349752	0.119	0.9054	
017120	1	61.865679	61.552405	1.005	0.3154	
052280	1	306.957	95.131532	3.227	0.0013	
053310	1	155.331	62.584606	2.482	0.0134	
056360	1	88.240310	72.192168	1.222	0.2223	
069999	1	77.624618	73.456939	1.057	0.2912	
D79999	1	-21.375711	115.756	-0.185	0.8536	
010	1	102.557	68.916915	1.488	0.1374	
0302	1	-100.763	69.082456	-1.459	0.1454	

TEST: NY_75	NUMERATOR:	41719.5	OF:	1	F VALUE:	11.6515
	DENOMINATOR:	3580.6	OF:	433	PROB >F :	0.0007
TEST: NYO	NUMERATOR:	13667.1	OF:	1	F VALUE:	3.8170
	DENOMINATOR:	3580.6	OF:	433	PROB >F :	0.0514
TEST: NY75	NUMERATOR:	873.733	OF:	1	F VALUE:	0.2440
	OENOMINATOR:	3580.6	OF:	433	PROB >F :	0.6216
TEST: MO_75	NUMERATOR:	15407.5	OF:	1	F VALUE:	4.3030
	OENOMINATOR:	3580.6	OF:	433	PROB >F :	0.0386
TEST: MOO	NUMERATOR:	557.947	OF:	1	F VALUE:	0.1558
	DENOMINATOR:	3580.6	DF:	433	PROB >F :	0.6932
TEST: MO75	NUMERATOR:	5911.32	DF:	1	F VALUE:	1.6509
	DENOMINATOR:	3580.6	DF:	433	PROB >F :	0.1995

APPENDIX FOR TABLE 2.12(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
D00041	1	39.440874	64.480034	0.612	0.5411	
D00050	1	-17.417291	59.275287	-0.294	0.7690	
D00060	1	177.172	55.848394	3.172	0.0016	
D00070	1	10.099394	50.708138	0.199	0.8422	
D00080	1	397.520	60.613782	6.558	0.0001	
D00090	1	277.845	75.276244	3.691	0.0003	
D00100	1	5.714492	58.518941	0.098	0.9223	
D00101	1	-101.597	56.683573	-1.792	0.0738	
D00110	1	-114.845	52.625893	-2.182	0.0296	
D00121	1	140.947	72.883712	1.934	0.0538	
D00130	1	1.412450	61.023898	0.023	0.9815	
D00140	1	9.926920	60.430602	0.164	0.8696	
D00141	1	4.100102	63.087371	0.065	0.9482	
D00150	1	32.073697	62.809943	0.511	0.6099	
D00160	1	-55.960289	66.056544	-0.847	0.3974	
D00180	1	-155.743	52.368629	-2.974	0.0031	
D00190	1	46.071901	56.048460	0.822	0.4115	
D00200	1	-42.523433	62.522791	-0.680	0.4968	
D00210	1	6.572868	63.204805	0.104	0.9172	
D00220	1	49.000223	65.218846	0.751	0.4529	
D00230	1	-80.372465	64.272765	-1.250	0.2118	
D00250	1	-64.484994	53.653332	-1.202	0.2301	
D00260	1	-19.790490	65.958058	-0.300	0.7643	
D00270	1	-64.554662	51.684199	-1.249	0.2123	
D00280	1	171.230	63.610338	2.692	0.0074	
D00290	1	23.970958	53.555937	0.448	0.6547	
D00310	1	-6.472953	64.042101	-0.101	0.9195	
D00320	1	227.153	71.373393	3.183	0.0016	
D00332	1	88.827185	62.228986	1.427	0.1542	
D00333	1	251.568	58.785353	4.279	0.0001	
D00334	1	60.159855	55.940699	1.075	0.2828	
D00337	1	74.660820	56.558591	1.320	0.1875	
D00340	1	167.938	78.366883	2.143	0.0327	
D00350	1	92.082950	61.641990	1.494	0.1359	
D00361	1	-169.845	51.939744	-3.270	0.0012	
D00362	1	204.836	57.907590	3.537	0.0004	
D00363	1	-101.575	58.742380	-1.729	0.0845	
D00364	1	-25.536783	50.313810	-0.508	0.6120	
D00370	1	165.464	50.974607	3.246	0.0013	
D00380	1	-73.052446	56.274951	-1.298	0.1949	
D00390	1	59.447157	66.803524	0.890	0.3740	
D00392	1	374.721	66.220202	5.659	0.0001	
D00400	1	94.286674	84.248955	1.119	0.2637	
D00410	1	35.838047	53.057717	0.675	0.4997	
D00423	1	10.572844	57.085040	0.185	0.8531	
D00424	1	26.142481	62.735455	0.417	0.6771	
D00430	1	65.056713	68.546131	0.949	0.3431	
D00441	1	-71.112730	53.254401	-1.335	0.1825	
D00443	1	-28.279390	53.821397	-0.525	0.5996	

APPENDIX FOR TABLE 2.12(d)

(continued)

DEP VARIABLE: BILLPAY BENEFITS PAID PER BILL

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	93	290175483	3120166	871.409	0.0001
ERROR	433	1550400	3580.601		
U TOTAL	526	291725884			

ROOT MSE	59.838123	R-SQUARE	0.9947
DEP MEAN	720.873	ADJ R-SQ	0.9936
C.V.	8.300781		

NOTE: NO INTERCEPT TERM IS USED. R-SQUARE IS REDEFINED.

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR HO: PARAMETER=0	PROB > |T|	VARIABLE LABEL
DNY	1	-24.639710	48.551182	-0.507	0.6121	NY BEFORE FIXED PRICE=1
DNYFP	1	-125.020	75.658292	-1.652	0.0992	NY AFTER FIXED PRICE =1
DMD	1	257.120	65.810289	3.907	0.0001	MD BEFORE FIXED PRICE=1
DMDFP	1	239.494	77.291606	3.099	0.0021	MD AFTER FIXED PRICE=1
LNBILL	1	35.929113	14.230803	2.525	0.0119	LN OF BILLS PROCESSED
BILLRET	1	-0.092762	3.302849	-0.028	0.9776	TOTAL % OF BILLS RETURNED
DEVRAT	1	-4.784175	1.775605	-2.694	0.0073	DEVELOPMENT RATE
AUDPCT	1	0.082370	0.178148	0.462	0.6441	PCT OF PROVEDERS AUDITED
PTTDT	1	-0.415124	0.735840	-0.564	0.5729	AV INTERMED PROCESSING TIME
MRB	1	0.141656	0.310370	0.456	0.6483	% BILLS RECVD IN MACHINE READABLE FORM
PIPPCT	1	-1.295954	0.529726	-2.446	0.0148	PCT OF PROVIDERS ON PIP
SETCRD	1	-0.079410	0.132330	-0.600	0.5488	% OF SETTLED HOSP COST REPORTS/PRIOR FY
RENT	1	0.125785	0.031353	4.012	0.0001	RENT PER SQ FOOT
DTENTY	1	-6.784507	7.060568	-0.961	0.3371	DATA ENTRY SALARY
OPMGR	1	2.447338	1.870347	1.308	0.1914	OPERATIONS MANAGER SALARY (000)
SRSYANL	1	7.877062	1.663063	4.736	0.0001	SR SYS ANALYST SALARY (000)
CLRK	1	2.827539	0.978432	2.890	0.0040	CLERICAL WAGE PER WEEK
OUTPCT	1	-8.076559	1.918360	-4.210	0.0001	PERCENT OF CLAIMS REC'D, OUTPATIENT
SNFPCT	1	-5.765438	3.115694	-1.850	0.0649	PERCENT OF CLAIMS REC'D, SNF
HHAPCT	1	-14.113886	1.789756	-7.886	0.0001	PERCENT OF CLAIMS REC'D, HHA
OTHPCT	1	-17.187430	2.692337	-6.384	0.0001	PERCENT OF CLAIMS REC'D, OTHER
YR77	1	30.656250	11.109194	2.760	0.0060	
YR78	1	38.193933	11.689826	3.267	0.0012	
YR79	1	67.818912	13.459932	5.039	0.0001	
YR80	1	96.469440	14.777659	6.528	0.0001	
YR81	1	105.614	17.288531	6.109	0.0001	
YR82	1	180.910	19.353619	9.348	0.0001	
YR83	1	119.329	21.613696	5.521	0.0001	
NOMODEL	1	-31.116126	19.650568	-1.583	0.1140	
D00020	1	-118.303	69.518857	-1.702	0.0895	
D00030	1	224.404	60.802044	3.691	0.0003	
D00040	1	168.918	72.024863	2.345	0.0195	

APPENDIX FOR TABLE 2.12(d)

TEST:NY1	NUMERATOR:	29.83438241	DF:	1	F VALUE:	1.8670
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1725
TEST:NY15	NUMERATOR:	22.00320932	DF:	1	F VALUE:	1.3769
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.2412
TEST:NY2	NUMERATOR:	15.36193012	DF:	1	F VALUE:	0.9613
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.3274
TEST:MO_2	NUMERATOR:	24.88963242	DF:	1	F VALUE:	1.5575
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.2127
TEST:MO_15	NUMERATOR:	32.82091094	DF:	1	F VALUE:	2.0538
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1525
TEST:MO_1	NUMERATOR:	41.84739747	DF:	1	F VALUE:	2.6187
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1063
TEST:MOO	NUMERATOR:	63.18599454	DF:	1	F VALUE:	3.9540
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0474
TEST:MO1	NUMERATOR:	88.90542363	DF:	1	F VALUE:	5.5634
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0188
TEST:MO15	NUMERATOR:	103.40795018	DF:	1	F VALUE:	6.4710
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0113
TEST:MO2	NUMERATOR:	119.00568474	DF:	1	F VALUE:	7.4470
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0066

APPENDIX FOR TABLE 2.13

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	PROB>|T|	VARIABLE LABEL
D00333	1	8.932738	2.008342	4.4478	0.0001	
D00334	1	12.578228	1.711815	7.3479	0.0001	
D00337	1	5.650802	1.605825	3.5189	0.0005	
D00340	1	10.853981	1.973952	5.4986	0.0001	
D00350	1	7.441609	1.762335	4.2226	0.0001	
D00361	1	8.556803	1.728593	4.9502	0.0001	
D00362	1	7.155077	1.641838	4.3580	0.0001	
D00363	1	11.587221	1.980024	5.8521	0.0001	
D00364	1	7.356347	1.677404	4.3856	0.0001	
D00370	1	9.573992	1.744774	5.4872	0.0001	
D00380	1	11.776759	2.287461	5.1484	0.0001	
D00390	1	8.953833	1.908761	4.6909	0.0001	
D00392	1	5.232044	1.942222	2.6938	0.0073	
D00400	1	4.875978	1.649155	2.9567	0.0033	
D00410	1	8.737539	1.665732	5.2455	0.0001	
D00423	1	10.735352	1.760412	6.0982	0.0001	
D00424	1	8.183002	1.639009	4.9927	0.0001	
D00430	1	10.206335	2.298988	4.4395	0.0001	
D00441	1	9.199079	1.742737	5.2785	0.0001	
D00443	1	9.271002	1.881150	4.9284	0.0001	
D00444	1	3.066349	1.647347	1.8614	0.0633	
D00450	1	10.036432	1.892813	5.3024	0.0001	
D00460	1	3.876925	1.848267	2.0976	0.0365	
D00470	1	13.687992	1.942586	7.0463	0.0001	
D17120	1	4.842162	1.601282	3.0239	0.0026	
D52280	1	5.707474	1.750720	3.2601	0.0012	
D53310	1	5.467937	1.763497	3.1006	0.0021	
D56360	1	9.443721	1.737470	5.4353	0.0001	
D69999	1	20.376656	2.023007	10.0725	0.0001	
D79999	1	8.598450	1.651942	5.2051	0.0001	
D10	1	11.731621	1.909265	6.1446	0.0001	
D302	1	10.354529	2.923136	3.5423	0.0004	

TEST:NY_2	NUMERATOR:	101.80919275	DF:	1	F VALUE:	6.3709
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0119
TEST:NY_15	NUMERATOR:	86.83865629	DF:	1	F VALUE:	5.4341
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0202
TEST:NY_1	NUMERATOR:	73.05801373	DF:	1	F VALUE:	4.5718
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0330
TEST:NYO	NUMERATOR:	49.06641028	DF:	1	F VALUE:	3.0704
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0804

APPENDIX FOR TABLE 2.13

(continued)

TEST:NY1	NUMERATOR:	29.83438241	DF:	1	F VALUE:	1.8670
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1725
TEST:NY15	NUMERATOR:	22.00320932	DF:	1	F VALUE:	1.3769
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.2412
TEST:NY2	NUMERATOR:	15.36193012	DF:	1	F VALUE:	0.9613
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.3274
TEST:MO_2	NUMERATOR:	24.88963242	DF:	1	F VALUE:	1.5575
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.2127
TEST:MO_15	NUMERATOR:	32.82091094	DF:	1	F VALUE:	2.0538
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1525
TEST:MO_1	NUMERATOR:	41.84739747	DF:	1	F VALUE:	2.6187
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.1063
TEST:MOO	NUMERATOR:	63.18599454	DF:	1	F VALUE:	3.9540
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0474
TEST:MO1	NUMERATOR:	88.90542363	DF:	1	F VALUE:	5.5634
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0188
TEST:MO15	NUMERATOR:	103.40795018	DF:	1	F VALUE:	6.4710
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0113
TEST:MO2	NUMERATOR:	119.00568474	DF:	1	F VALUE:	7.4470
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0066

APPENDIX FOR TABLE 2.13

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	PROB>|T|	VARIABLE LABEL
D00333	1	8.932738	2.008342	4.4478	0.0001	
D00334	1	12.578228	1.711815	7.3479	0.0001	
D00337	1	5.650802	1.605825	3.5189	0.0005	
D00340	1	10.853981	1.973952	5.4986	0.0001	
D00350	1	7.441609	1.762335	4.2226	0.0001	
D00361	1	8.556803	1.728593	4.9502	0.0001	
D00362	1	7.155077	1.641838	4.3580	0.0001	
D00363	1	11.587221	1.980024	5.8521	0.0001	
D00364	1	7.356347	1.677404	4.3856	0.0001	
D00370	1	9.573992	1.744774	5.4872	0.0001	
D00380	1	11.776759	2.287461	5.1484	0.0001	
D00390	1	8.953833	1.908761	4.6909	0.0001	
D00392	1	5.232044	1.942222	2.6938	0.0073	
D00400	1	4.875978	1.649155	2.9567	0.0033	
D00410	1	8.737539	1.665732	5.2455	0.0001	
D00423	1	10.735352	1.760412	6.0982	0.0001	
D00424	1	8.183002	1.639009	4.9927	0.0001	
D00430	1	10.206335	2.298988	4.4395	0.0001	
D00441	1	9.199079	1.742737	5.2785	0.0001	
D00443	1	9.271002	1.881150	4.9284	0.0001	
D00444	1	3.066349	1.647347	1.8614	0.0633	
D00450	1	10.036432	1.892813	5.3024	0.0001	
D00460	1	3.876925	1.848267	2.0976	0.0365	
D00470	1	13.687992	1.942586	7.0463	0.0001	
D17120	1	4.842162	1.601282	3.0239	0.0026	
D52280	1	5.707474	1.750720	3.2601	0.0012	
D53310	1	5.467937	1.763497	3.1006	0.0021	
D56360	1	9.443721	1.737470	5.4353	0.0001	
D69999	1	20.376656	2.023007	10.0725	0.0001	
D79999	1	8.598450	1.651942	5.2051	0.0001	
D10	1	11.731621	1.909265	6.1446	0.0001	
D302	1	10.354529	2.923136	3.5423	0.0004	

TEST:NY_2	NUMERATOR:	101.80919275	DF:	1	F VALUE:	6.3709
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0119
TEST:NY_15	NUMERATOR:	86.83865629	DF:	1	F VALUE:	5.4341
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0202
TEST:NY_1	NUMERATOR:	73.05801373	DF:	1	F VALUE:	4.5718
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0330
TEST:NYO	NUMERATOR:	49.06641028	DF:	1	F VALUE:	3.0704
	DENOMINATOR:	15.98027107	DF:	454	PROB > F:	0.0804

APPENDIX FOR TABLE 2.13

(continued)

TEST:NY1	NUMERATOR:	0.02949792	DF:	1	F VALUE:	0.0975
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.7549
TEST:NY15	NUMERATOR:	0.22182156	DF:	1	F VALUE:	0.7335
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.3922
TEST:MO_15	NUMERATOR:	23.26532945	DF:	1	F VALUE:	76.9342
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MO_1	NUMERATOR:	16.62257330	DF:	1	F VALUE:	54.9678
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MOO	NUMERATOR:	6.67916280	DF:	1	F VALUE:	22.0868
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MO1	NUMERATOR:	1.19188803	DF:	1	F VALUE:	3.9414
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0477
TEST:MO15	NUMERATOR:	0.11930154	DF:	1	F VALUE:	0.3945
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.5303

APPENDIX FOR TABLE 2.15(d)

(continued)

TEST:NY1	NUMERATOR:	0.02949792	DF:	1	F VALUE:	0.0975
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.7549
TEST:NY15	NUMERATOR:	0.22182156	DF:	1	F VALUE:	0.7335
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.3922
TEST:MO_15	NUMERATOR:	23.26532945	DF:	1	F VALUE:	76.9342
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MO_1	NUMERATOR:	16.62257330	DF:	1	F VALUE:	54.9678
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MOO	NUMERATOR:	6.67916280	DF:	1	F VALUE:	22.0868
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0001
TEST:MO1	NUMERATOR:	1.19188803	DF:	1	F VALUE:	3.9414
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.0477
TEST:MO15	NUMERATOR:	0.11930154	DF:	1	F VALUE:	0.3945
	DENOMINATOR:	0.30240571	DF:	448	PROB > F:	0.5303

APPENDIX FOR TABLE 2.15(d)

(continued)

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T RATIO	PROB>|T|	VARIABLE LABEL
D00230	1	210.795905	49.137396	4.2899	0.0001	
D00250	1	152.988057	50.149525	3.0506	0.0024	
D00260	1	281.530425	46.456581	6.0601	0.0001	
D00270	1	25.854606	54.154574	0.4774	0.6333	
D00280	1	454.024440	48.775272	9.3085	0.0001	
D00290	1	155.121647	52.340864	2.9637	0.0032	
D00310	1	193.152157	47.725438	4.0472	0.0001	
D00320	1	598.220273	45.550623	13.1331	0.0001	
D00332	1	368.957466	48.821723	7.5572	0.0001	
D00333	1	464.108786	51.156208	9.0724	0.0001	
D00334	1	302.925107	49.949594	6.0646	0.0001	
D00337	1	352.850425	49.484455	7.1305	0.0001	
D00340	1	626.771379	44.240203	14.1675	0.0001	
D00350	1	369.451514	49.569393	7.4532	0.0001	
D00361	1	1.146557	53.292176	0.0215	0.9828	
D00362	1	422.437791	53.261254	7.9314	0.0001	
D00363	1	119.646460	53.136272	2.2517	0.0248	
D00364	1	84.657756	52.508232	1.6123	0.1076	
D00370	1	244.289030	53.255680	4.5871	0.0001	
D00380	1	80.851292	50.304649	1.6072	0.1087	
D00390	1	327.167919	46.959728	6.9670	0.0001	
D00392	1	734.186302	50.903807	14.4230	0.0001	
D00400	1	555.856491	45.706405	12.1615	0.0001	
D00410	1	158.398610	51.741099	3.0614	0.0023	
D00423	1	249.966990	49.502977	5.0495	0.0001	
D00424	1	272.197951	46.565484	5.8455	0.0001	
D00430	1	347.479364	52.964957	6.5606	0.0001	
D00441	1	112.706132	50.135531	2.2480	0.0251	
D00443	1	115.263251	55.426170	2.0796	0.0381	
D00444	1	127.717560	51.846876	2.4634	0.0141	
D00450	1	288.120622	50.235570	5.7354	0.0001	
D00460	1	122.702432	54.343881	2.2579	0.0244	
D00470	1	151.829999	81.905255	1.8537	0.0644	
D17120	1	303.427231	55.333182	5.4836	0.0001	
D52280	1	603.335126	71.531909	8.4345	0.0001	
D53310	1	395.859554	56.907539	6.9562	0.0001	
D56360	1	252.100214	76.404201	3.2996	0.0010	
D69999	1	319.394690	56.316434	5.6714	0.0001	
D79999	1	284.684380	106.183719	2.6811	0.0076	
D10	1	411.212984	47.091441	8.7322	0.0001	
D302	1	81.102605	68.016772	1.1924	0.2337	

TEST:NY_100	NUMERATOR:	2947.93592195	DF:	1	F VALUE:	0.6450
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.4223
TEST:NY_75	NUMERATOR:	191.86932820	DF:	1	F VALUE:	0.0420
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.8377

APPENDIX FOR TABLE 2.17

(continued)

TEST:NYO	NUMERATOR:	11551.50575424	DF:	1	F VALUE:	2.5276
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.1126
TEST:NY75	NUMERATOR:	52352.89649124	DF:	1	F VALUE:	11.4552
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.0008
TEST:NY100	NUMERATOR:	72495.97213934	DF:	1	F VALUE:	15.8626
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.0001
TEST:MO_100	NUMERATOR:	6759.29526244	DF:	1	F VALUE:	1.4790
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.2246
TEST:MO_75	NUMERATOR:	1984.51890805	DF:	1	F VALUE:	0.4342
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.5103
TEST:MOO	NUMERATOR:	4685.81899236	DF:	1	F VALUE:	1.0253
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.3118
TEST:MO75	NUMERATOR:	32925.56279789	DF:	1	F VALUE:	7.2044
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.0075
TEST:MO100	NUMERATOR:	48014.02044889	DF:	1	F VALUE:	10.5058
	DENOMINATOR:	4570.23146302	DF:	445	PROB > F:	0.0013

APPENDIX FOR TABLE 2.17

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